

PETROLEUM DEVELOPMENT CORP Weld County CO

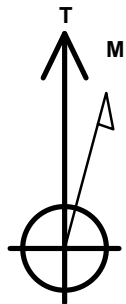
Well Name: **Richter 34R-343**

Surface Location: Richter 27T-HZ Pad Sec.27-T7N-R64W
 North American Datum 1983 , US State Plane 1983 , Colorado Northern Zone
 Ground Elevation: 4870.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	1440176.39	3269159.22	40.537650	-104.531590	
RKB - 13' WELL @ 4883.0ft (RKB - 13')						

WELLBORE TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Shape
BHL 500'FSL & 1650'FEL	7015.0	-5016.7	-300.3	Point



Azimuths to True North
 Magnetic North: 8.47°

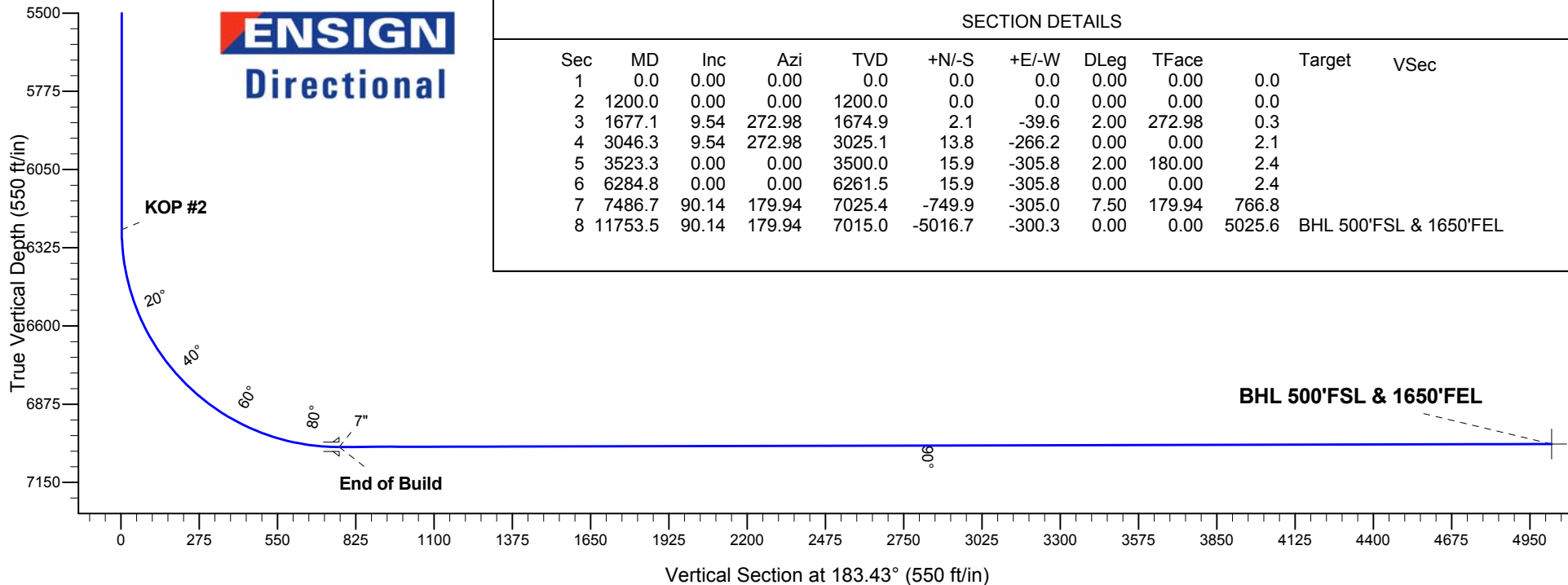
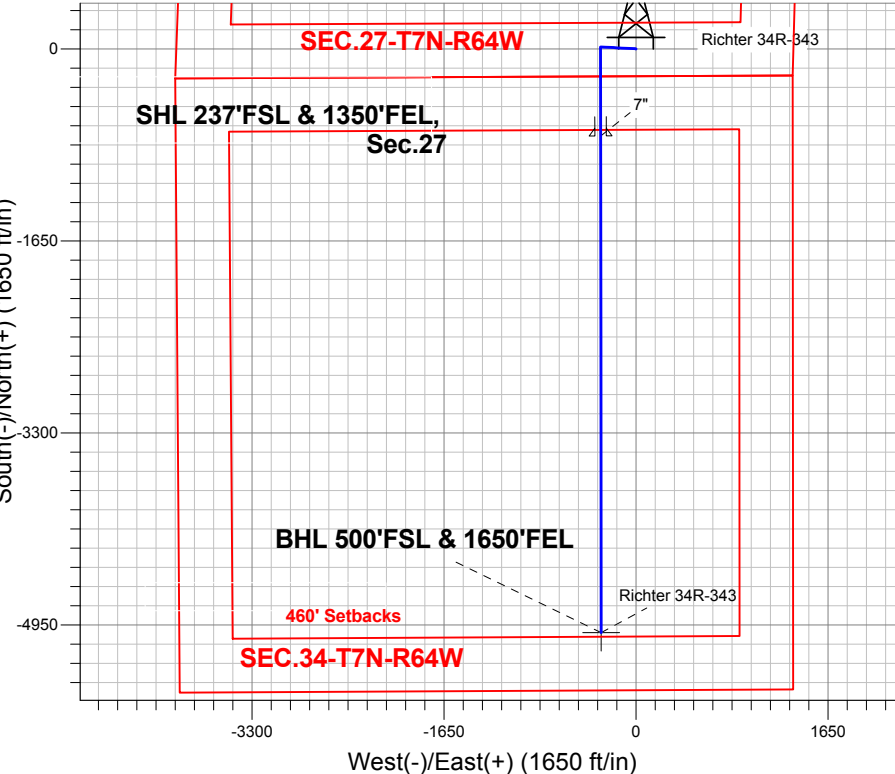
Magnetic Field
 Strength: 53004.9snT
 Dip Angle: 67.13°
 Date: 7/25/2013
 Model: IGRF2010

ANNOTATIONS

TVD	MD	Annotation
1200.0	1200.0	KOP #1
6261.5	6284.8	KOP #2
7025.4	7486.7	End of Build

Richter 27T-HZ Pad Sec.27-T7N-R64W
 Richter 34R-343
 Plan #2 (7-25-13)
 11:33, July 25 2013

South(-)/North(+) (1650 ft/in)



SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	Target	VSec
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2	1200.0	0.00	0.00	1200.0	0.0	0.0	0.00	0.00	0.0	
3	1677.1	9.54	272.98	1674.9	2.1	-39.6	2.00	272.98	0.3	
4	3046.3	9.54	272.98	3025.1	13.8	-266.2	0.00	0.00	2.1	
5	3523.3	0.00	0.00	3500.0	15.9	-305.8	2.00	180.00	2.4	
6	6284.8	0.00	0.00	6261.5	15.9	-305.8	0.00	0.00	2.4	
7	7486.7	90.14	179.94	7025.4	-749.9	-305.0	7.50	179.94	766.8	
8	11753.5	90.14	179.94	7015.0	-5016.7	-300.3	0.00	0.00	5025.6	BHL 500'FSL & 1650'FEL



PETROLEUM DEVELOPMENT CORP Weld County CO

SEC.27-T7N-R64W

Richter 27T-HZ Pad Sec.27-T7N-R64W

Richter 34R-343

Wellbore #1

Plan: Plan #2 (7-25-13)

Standard Planning Report

25 July, 2013

Database:	Landmark	Local Co-ordinate Reference:	Well Ritcher 34R-343
Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	TVD Reference:	WELL @ 4883.0ft (RKB - 13')
Project:	SEC.27-T7N-R64W	MD Reference:	WELL @ 4883.0ft (RKB - 13')
Site:	Richter 27T-HZ Pad Sec.27-T7N-R64W	North Reference:	True
Well:	Richter 34R-343	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #2 (7-25-13)		

Project	SEC.27-T7N-R64W, Weld County, CO		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		Using Well Reference Point
Map Zone:	Colorado Northern Zone		Using geodetic scale factor

Site						Richter 27T-HZ Pad Sec.27-T7N-R64W											
Site Position:						Northing:			1,440,175.74 ft			Latitude:			40.537650		
From:			Lat/Long			Easting:			3,269,098.08 ft			Longitude:			-104.531810		
Position Uncertainty:			0.0 ft			Slot Radius:			"			Grid Convergence:			0.63 °		

Well	Richter 34R-343					
Well Position	+N/-S	0.0 ft	Northing:	1,440,176.39 ft	Latitude:	40.537650
	+E/-W	61.1 ft	Easting:	3,269,159.22 ft	Longitude:	-104.531590
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,870.0 ft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	7/25/2013	8.47	67.13	53,005

Design	Plan #2 (7-25-13)			
Audit Notes:				
Version:	Phase:	PROTOTYPE	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.0	0.0	0.0	183.43

Plan Sections										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,200.0	0.00	0.00	1,200.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,677.1	9.54	272.98	1,674.9	2.1	-39.6	2.00	2.00	0.00	272.98	
3,046.3	9.54	272.98	3,025.1	13.8	-266.2	0.00	0.00	0.00	0.00	
3,523.3	0.00	0.00	3,500.0	15.9	-305.8	2.00	-2.00	0.00	180.00	
6,284.8	0.00	0.00	6,261.5	15.9	-305.8	0.00	0.00	0.00	0.00	
7,486.7	90.14	179.94	7,025.4	-749.9	-305.0	7.50	7.50	0.00	179.94	
11,753.5	90.14	179.94	7,015.0	-5,016.7	-300.3	0.00	0.00	0.00	0.00	BHL 500'FSL & 165

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Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	TVD Reference:	WELL @ 4883.0ft (RKB - 13')
Project:	SEC.27-T7N-R64W	MD Reference:	WELL @ 4883.0ft (RKB - 13')
Site:	Richter 27T-HZ Pad Sec.27-T7N-R64W	North Reference:	True
Well:	Richter 34R-343	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #2 (7-25-13)		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00
100.0	0.00	0.00	100.0	0.0	0.0	0.0	0.00	0.00	0.00
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	0.00
300.0	0.00	0.00	300.0	0.0	0.0	0.0	0.00	0.00	0.00
400.0	0.00	0.00	400.0	0.0	0.0	0.0	0.00	0.00	0.00
500.0	0.00	0.00	500.0	0.0	0.0	0.0	0.00	0.00	0.00
600.0	0.00	0.00	600.0	0.0	0.0	0.0	0.00	0.00	0.00
700.0	0.00	0.00	700.0	0.0	0.0	0.0	0.00	0.00	0.00
800.0	0.00	0.00	800.0	0.0	0.0	0.0	0.00	0.00	0.00
900.0	0.00	0.00	900.0	0.0	0.0	0.0	0.00	0.00	0.00
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.0	0.00	0.00	0.00
1,100.0	0.00	0.00	1,100.0	0.0	0.0	0.0	0.00	0.00	0.00
1,200.0	0.00	0.00	1,200.0	0.0	0.0	0.0	0.00	0.00	0.00
KOP #1									
1,300.0	2.00	272.98	1,300.0	0.1	-1.7	0.0	2.00	2.00	0.00
1,400.0	4.00	272.98	1,399.8	0.4	-7.0	0.1	2.00	2.00	0.00
1,500.0	6.00	272.98	1,499.5	0.8	-15.7	0.1	2.00	2.00	0.00
1,600.0	8.00	272.98	1,598.7	1.4	-27.8	0.2	2.00	2.00	0.00
1,677.1	9.54	272.98	1,674.9	2.1	-39.6	0.3	2.00	2.00	0.00
1,700.0	9.54	272.98	1,697.5	2.3	-43.4	0.3	0.00	0.00	0.00
1,800.0	9.54	272.98	1,796.1	3.1	-59.9	0.5	0.00	0.00	0.00
1,900.0	9.54	272.98	1,894.7	4.0	-76.5	0.6	0.00	0.00	0.00
2,000.0	9.54	272.98	1,993.3	4.8	-93.0	0.7	0.00	0.00	0.00
2,100.0	9.54	272.98	2,091.9	5.7	-109.6	0.9	0.00	0.00	0.00
2,200.0	9.54	272.98	2,190.6	6.6	-126.1	1.0	0.00	0.00	0.00
2,300.0	9.54	272.98	2,289.2	7.4	-142.7	1.1	0.00	0.00	0.00
2,400.0	9.54	272.98	2,387.8	8.3	-159.2	1.2	0.00	0.00	0.00
2,500.0	9.54	272.98	2,486.4	9.1	-175.8	1.4	0.00	0.00	0.00
2,600.0	9.54	272.98	2,585.0	10.0	-192.4	1.5	0.00	0.00	0.00
2,700.0	9.54	272.98	2,683.6	10.9	-208.9	1.6	0.00	0.00	0.00
2,800.0	9.54	272.98	2,782.3	11.7	-225.5	1.8	0.00	0.00	0.00
2,900.0	9.54	272.98	2,880.9	12.6	-242.0	1.9	0.00	0.00	0.00
3,000.0	9.54	272.98	2,979.5	13.4	-258.6	2.0	0.00	0.00	0.00
3,046.3	9.54	272.98	3,025.1	13.8	-266.2	2.1	0.00	0.00	0.00
3,100.0	8.47	272.98	3,078.2	14.3	-274.6	2.2	2.00	-2.00	0.00
3,200.0	6.47	272.98	3,177.3	15.0	-287.6	2.3	2.00	-2.00	0.00
3,300.0	4.47	272.98	3,276.9	15.4	-297.1	2.3	2.00	-2.00	0.00
3,400.0	2.47	272.98	3,376.7	15.8	-303.1	2.4	2.00	-2.00	0.00
3,500.0	0.47	272.98	3,476.7	15.9	-305.7	2.4	2.00	-2.00	0.00
3,523.3	0.00	0.00	3,500.0	15.9	-305.8	2.4	2.00	-2.00	0.00
3,600.0	0.00	0.00	3,576.7	15.9	-305.8	2.4	0.00	0.00	0.00
3,700.0	0.00	0.00	3,676.7	15.9	-305.8	2.4	0.00	0.00	0.00
3,800.0	0.00	0.00	3,776.7	15.9	-305.8	2.4	0.00	0.00	0.00
3,900.0	0.00	0.00	3,876.7	15.9	-305.8	2.4	0.00	0.00	0.00
4,000.0	0.00	0.00	3,976.7	15.9	-305.8	2.4	0.00	0.00	0.00
4,100.0	0.00	0.00	4,076.7	15.9	-305.8	2.4	0.00	0.00	0.00
4,200.0	0.00	0.00	4,176.7	15.9	-305.8	2.4	0.00	0.00	0.00
4,300.0	0.00	0.00	4,276.7	15.9	-305.8	2.4	0.00	0.00	0.00
4,400.0	0.00	0.00	4,376.7	15.9	-305.8	2.4	0.00	0.00	0.00
4,500.0	0.00	0.00	4,476.7	15.9	-305.8	2.4	0.00	0.00	0.00
4,600.0	0.00	0.00	4,576.7	15.9	-305.8	2.4	0.00	0.00	0.00
4,700.0	0.00	0.00	4,676.7	15.9	-305.8	2.4	0.00	0.00	0.00
4,800.0	0.00	0.00	4,776.7	15.9	-305.8	2.4	0.00	0.00	0.00

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Project:	SEC.27-T7N-R64W	MD Reference:	WELL @ 4883.0ft (RKB - 13')
Site:	Richter 27T-HZ Pad Sec.27-T7N-R64W	North Reference:	True
Well:	Richter 34R-343	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #2 (7-25-13)		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
4,900.0	0.00	0.00	4,876.7	15.9	-305.8	2.4	0.00	0.00	0.00
5,000.0	0.00	0.00	4,976.7	15.9	-305.8	2.4	0.00	0.00	0.00
5,100.0	0.00	0.00	5,076.7	15.9	-305.8	2.4	0.00	0.00	0.00
5,200.0	0.00	0.00	5,176.7	15.9	-305.8	2.4	0.00	0.00	0.00
5,300.0	0.00	0.00	5,276.7	15.9	-305.8	2.4	0.00	0.00	0.00
5,400.0	0.00	0.00	5,376.7	15.9	-305.8	2.4	0.00	0.00	0.00
5,500.0	0.00	0.00	5,476.7	15.9	-305.8	2.4	0.00	0.00	0.00
5,600.0	0.00	0.00	5,576.7	15.9	-305.8	2.4	0.00	0.00	0.00
5,700.0	0.00	0.00	5,676.7	15.9	-305.8	2.4	0.00	0.00	0.00
5,800.0	0.00	0.00	5,776.7	15.9	-305.8	2.4	0.00	0.00	0.00
5,900.0	0.00	0.00	5,876.7	15.9	-305.8	2.4	0.00	0.00	0.00
6,000.0	0.00	0.00	5,976.7	15.9	-305.8	2.4	0.00	0.00	0.00
6,100.0	0.00	0.00	6,076.7	15.9	-305.8	2.4	0.00	0.00	0.00
6,200.0	0.00	0.00	6,176.7	15.9	-305.8	2.4	0.00	0.00	0.00
6,284.8	0.00	0.00	6,261.5	15.9	-305.8	2.4	0.00	0.00	0.00
KOP #2									
6,300.0	1.14	179.94	6,276.7	15.7	-305.8	2.5	7.49	7.49	0.00
6,400.0	8.64	179.94	6,376.2	7.2	-305.8	11.0	7.50	7.50	0.00
6,500.0	16.14	179.94	6,473.8	-14.2	-305.8	32.4	7.50	7.50	0.00
6,600.0	23.64	179.94	6,567.8	-48.2	-305.7	66.4	7.50	7.50	0.00
6,700.0	31.14	179.94	6,656.5	-94.2	-305.7	112.3	7.50	7.50	0.00
6,800.0	38.64	179.94	6,738.5	-151.3	-305.6	169.3	7.50	7.50	0.00
6,900.0	46.14	179.94	6,812.3	-218.7	-305.5	236.6	7.50	7.50	0.00
7,000.0	53.64	179.94	6,876.7	-295.1	-305.5	312.8	7.50	7.50	0.00
7,100.0	61.14	179.94	6,930.5	-379.3	-305.4	396.9	7.50	7.50	0.00
7,200.0	68.64	179.94	6,972.9	-469.8	-305.3	487.2	7.50	7.50	0.00
7,300.0	76.14	179.94	7,003.2	-565.0	-305.2	582.2	7.50	7.50	0.00
7,400.0	83.64	179.94	7,020.7	-663.4	-305.1	680.4	7.50	7.50	0.00
7,486.7	90.14	179.94	7,025.4	-749.9	-305.0	766.8	7.50	7.50	0.00
End of Build - 7"									
7,500.0	90.14	179.94	7,025.4	-763.2	-304.9	780.1	0.00	0.00	0.00
7,600.0	90.14	179.94	7,025.1	-863.2	-304.8	879.9	0.00	0.00	0.00
7,700.0	90.14	179.94	7,024.9	-963.2	-304.7	979.7	0.00	0.00	0.00
7,800.0	90.14	179.94	7,024.7	-1,063.2	-304.6	1,079.5	0.00	0.00	0.00
7,900.0	90.14	179.94	7,024.4	-1,163.2	-304.5	1,179.3	0.00	0.00	0.00
8,000.0	90.14	179.94	7,024.2	-1,263.2	-304.4	1,279.1	0.00	0.00	0.00
8,100.0	90.14	179.94	7,023.9	-1,363.2	-304.3	1,379.0	0.00	0.00	0.00
8,200.0	90.14	179.94	7,023.7	-1,463.2	-304.2	1,478.8	0.00	0.00	0.00
8,300.0	90.14	179.94	7,023.4	-1,563.2	-304.1	1,578.6	0.00	0.00	0.00
8,400.0	90.14	179.94	7,023.2	-1,663.2	-303.9	1,678.4	0.00	0.00	0.00
8,500.0	90.14	179.94	7,022.9	-1,763.2	-303.8	1,778.2	0.00	0.00	0.00
8,600.0	90.14	179.94	7,022.7	-1,863.2	-303.7	1,878.0	0.00	0.00	0.00
8,700.0	90.14	179.94	7,022.5	-1,963.2	-303.6	1,977.8	0.00	0.00	0.00
8,800.0	90.14	179.94	7,022.2	-2,063.2	-303.5	2,077.7	0.00	0.00	0.00
8,900.0	90.14	179.94	7,022.0	-2,163.2	-303.4	2,177.5	0.00	0.00	0.00
9,000.0	90.14	179.94	7,021.7	-2,263.2	-303.3	2,277.3	0.00	0.00	0.00
9,100.0	90.14	179.94	7,021.5	-2,363.2	-303.2	2,377.1	0.00	0.00	0.00
9,200.0	90.14	179.94	7,021.2	-2,463.2	-303.1	2,476.9	0.00	0.00	0.00
9,300.0	90.14	179.94	7,021.0	-2,563.2	-303.0	2,576.7	0.00	0.00	0.00
9,400.0	90.14	179.94	7,020.8	-2,663.2	-302.8	2,676.5	0.00	0.00	0.00
9,500.0	90.14	179.94	7,020.5	-2,763.2	-302.7	2,776.4	0.00	0.00	0.00
9,600.0	90.14	179.94	7,020.3	-2,863.2	-302.6	2,876.2	0.00	0.00	0.00
9,700.0	90.14	179.94	7,020.0	-2,963.2	-302.5	2,976.0	0.00	0.00	0.00

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Site:	Richter 27T-HZ Pad Sec.27-T7N-R64W	North Reference:	True
Well:	Richter 34R-343	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #2 (7-25-13)		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
9,800.0	90.14	179.94	7,019.8	-3,063.2	-302.4	3,075.8	0.00	0.00	0.00
9,900.0	90.14	179.94	7,019.5	-3,163.2	-302.3	3,175.6	0.00	0.00	0.00
10,000.0	90.14	179.94	7,019.3	-3,263.2	-302.2	3,275.4	0.00	0.00	0.00
10,100.0	90.14	179.94	7,019.0	-3,363.2	-302.1	3,375.2	0.00	0.00	0.00
10,200.0	90.14	179.94	7,018.8	-3,463.2	-302.0	3,475.1	0.00	0.00	0.00
10,300.0	90.14	179.94	7,018.6	-3,563.2	-301.9	3,574.9	0.00	0.00	0.00
10,400.0	90.14	179.94	7,018.3	-3,663.2	-301.7	3,674.7	0.00	0.00	0.00
10,500.0	90.14	179.94	7,018.1	-3,763.2	-301.6	3,774.5	0.00	0.00	0.00
10,600.0	90.14	179.94	7,017.8	-3,863.2	-301.5	3,874.3	0.00	0.00	0.00
10,700.0	90.14	179.94	7,017.6	-3,963.2	-301.4	3,974.1	0.00	0.00	0.00
10,800.0	90.14	179.94	7,017.3	-4,063.2	-301.3	4,073.9	0.00	0.00	0.00
10,900.0	90.14	179.94	7,017.1	-4,163.2	-301.2	4,173.8	0.00	0.00	0.00
11,000.0	90.14	179.94	7,016.8	-4,263.2	-301.1	4,273.6	0.00	0.00	0.00
11,100.0	90.14	179.94	7,016.6	-4,363.2	-301.0	4,373.4	0.00	0.00	0.00
11,200.0	90.14	179.94	7,016.4	-4,463.2	-300.9	4,473.2	0.00	0.00	0.00
11,300.0	90.14	179.94	7,016.1	-4,563.2	-300.8	4,573.0	0.00	0.00	0.00
11,400.0	90.14	179.94	7,015.9	-4,663.2	-300.6	4,672.8	0.00	0.00	0.00
11,500.0	90.14	179.94	7,015.6	-4,763.2	-300.5	4,772.6	0.00	0.00	0.00
11,600.0	90.14	179.94	7,015.4	-4,863.2	-300.4	4,872.5	0.00	0.00	0.00
11,700.0	90.14	179.94	7,015.1	-4,963.2	-300.3	4,972.3	0.00	0.00	0.00
11,753.5	90.14	179.94	7,015.0	-5,016.7	-300.3	5,025.6	0.00	0.00	0.00
BHL 500'FSL & 1650'FEL									

Casing Points

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
7,486.7	7,025.4	7"	7	7-1/2

Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
1,200.0	1,200.0	0.0	0.0	KOP #1
6,284.8	6,261.5	15.9	-305.8	KOP #2
7,486.7	7,025.4	-749.9	-305.0	End of Build



PETROLEUM DEVELOPMENT CORP Weld County CO

SEC.27-T7N-R64W

Richter 27T-HZ Pad Sec.27-T7N-R64W

Richter 34R-343

Wellbore #1

Plan #2 (7-25-13)

Anticollision Report

25 July, 2013



Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Ritcher 34R-343
Project:	SEC.27-T7N-R64W	TVD Reference:	WELL @ 4883.0ft (RKB - 13')
Reference Site:	Richter 27T-HZ Pad Sec.27-T7N-R64W	MD Reference:	WELL @ 4883.0ft (RKB - 13')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Richter 34R-343	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #2 (7-25-13)	Offset TVD Reference:	Offset Datum

Reference	Plan #2 (7-25-13)
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria
Interpolation Method:	MD Interval 100.0ft
Depth Range:	Unlimited
Results Limited by:	Maximum center-center distance of 1,000.0ft
Warning Levels Evaluated at:	2.00 Sigma
Error Model:	ISCWSA
Scan Method:	Closest Approach 3D
Error Surface:	Elliptical Conic

Survey Tool Program		Date	7/25/2013		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
0.0	11,753.5	Plan #2 (7-25-13) (Wellbore #1)	MWD	MWD - Standard	

Summary						
Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
Richter 27T-HZ Pad Sec.27-T7N-R64W						
Richter 34M-203 - Wellbore #1 - Plan #1 (9-27-12)	200.0	200.0	61.1	60.5	90.687	CC, ES
Richter 34M-203 - Wellbore #1 - Plan #1 (9-27-12)	11,753.5	11,781.0	791.9	597.4	4.071	SF
Richter 34M-423 - Wellbore #1 - Plan #1 (9-28-12)	1,000.0	1,000.0	30.6	26.3	7.159	CC, ES
Richter 34M-423 - Wellbore #1 - Plan #1 (9-28-12)	11,753.5	11,772.7	342.9	154.6	1.822	SF
Richter 34R-223 - Wellbore #1 - Plan #1 (9-27-12)	1,200.0	1,200.0	61.3	56.1	11.850	CC, ES
Richter 34R-223 - Wellbore #1 - Plan #1 (9-27-12)	11,753.5	11,684.2	665.0	471.8	3.442	SF
Richter 34R-403 - Wellbore #1 - Plan #1 (9-28-12)	1,200.0	1,200.0	30.8	25.6	5.956	CC, ES
Richter 34R-403 - Wellbore #1 - Plan #1 (9-28-12)	11,753.5	11,730.2	340.2	151.4	1.802	SF
Richter 34R-423 - Wellbore #1 - Plan #1 (9-28-12)	1,000.0	1,000.0	89.0	84.7	20.845	CC, ES
Richter 34R-423 - Wellbore #1 - Plan #1 (9-28-12)	11,753.5	11,768.0	993.8	799.8	5.123	SF
Richter 34U-303 - Wellbore #1 - Plan #2 (7-25-13)	200.0	200.0	119.6	118.9	177.334	CC, ES
Richter 34U-303 - Wellbore #1 - Plan #2 (7-25-13)	1,200.0	1,148.0	273.2	266.9	43.442	SF

Offset Design	Richter 27T-HZ Pad Sec.27-T7N-R64W - Richter 34M-203 - Wellbore #1 - Plan #1 (9-27-12)											Offset Site Error:	0.0 ft
Survey Program:	0-MWD											Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	-90.00	0.0	-61.1	61.1				
100.0	100.0	100.0	100.0	0.1	0.1	-90.00	0.0	-61.1	61.1	60.9	0.22	272.060	
200.0	200.0	200.0	200.0	0.3	0.3	-90.00	0.0	-61.1	61.1	60.5	0.67	90.687	CC, ES
300.0	300.0	297.9	297.9	0.6	0.5	-89.97	0.0	-62.8	62.9	61.7	1.11	56.656	
400.0	400.0	395.5	395.4	0.8	0.8	-89.90	0.1	-67.8	68.0	66.4	1.55	43.790	
500.0	500.0	492.7	492.2	1.0	1.0	-89.81	0.3	-76.1	76.5	74.5	2.02	37.846	
600.0	600.0	589.2	588.0	1.2	1.3	-89.71	0.4	-87.5	88.4	85.8	2.52	35.026	
700.0	700.0	684.9	682.6	1.5	1.6	-89.62	0.7	-102.1	103.6	100.5	3.06	33.798	
800.0	800.0	779.4	775.5	1.7	2.0	-89.53	1.0	-119.5	122.0	118.4	3.65	33.436	
900.0	900.0	872.7	866.6	1.9	2.4	-89.46	1.3	-139.8	143.7	139.4	4.28	33.551	
1,000.0	1,000.0	968.0	959.0	2.1	2.8	-89.40	1.7	-162.8	167.9	162.9	4.96	33.823	
1,100.0	1,100.0	1,065.0	1,053.1	2.4	3.3	-89.36	2.1	-186.5	192.3	186.6	5.67	33.890	
1,200.0	1,200.0	1,162.0	1,147.1	2.6	3.8	-89.32	2.5	-210.1	216.7	210.3	6.39	33.900	
1,300.0	1,300.0	1,259.4	1,241.6	2.8	4.3	-2.27	2.9	-233.9	239.4	233.7	5.74	41.729	
1,400.0	1,399.8	1,357.5	1,336.7	3.0	4.8	-2.28	3.3	-257.8	258.7	252.5	6.20	41.757	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Ritcher 34R-343
Project:	SEC.27-T7N-R64W	TVD Reference:	WELL @ 4883.0ft (RKB - 13')
Reference Site:	Richter 27T-HZ Pad Sec.27-T7N-R64W	MD Reference:	WELL @ 4883.0ft (RKB - 13')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Richter 34R-343	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #2 (7-25-13)	Offset TVD Reference:	Offset Datum

Offset Design Richter 27T-HZ Pad Sec.27-T7N-R64W - Richter 34M-203 - Wellbore #1 - Plan #1 (9-27-12)													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
1,500.0	1,499.5	1,456.2	1,432.5	3.2	5.3	-2.31	3.7	-281.9	274.6	267.9	6.66	41.218		
1,600.0	1,598.7	1,555.4	1,528.7	3.5	5.9	-2.38	4.1	-306.1	287.0	279.8	7.13	40.239		
1,700.0	1,697.5	1,655.0	1,625.3	3.7	6.4	-2.46	4.5	-330.4	296.0	288.4	7.61	38.899		
1,800.0	1,796.1	1,754.7	1,721.9	4.0	6.9	-2.56	4.9	-354.7	304.0	295.9	8.11	37.506		
1,900.0	1,894.7	1,854.4	1,818.6	4.3	7.4	-2.65	5.3	-379.1	312.0	303.4	8.61	36.255		
2,000.0	1,993.3	1,954.1	1,915.3	4.6	7.9	-2.74	5.7	-403.4	320.0	310.9	9.11	35.125		
2,100.0	2,091.9	2,053.7	2,011.9	5.0	8.5	-2.83	6.1	-427.7	328.0	318.4	9.62	34.103		
2,200.0	2,190.6	2,153.4	2,108.6	5.3	9.0	-2.91	6.5	-452.0	336.0	325.9	10.13	33.174		
2,300.0	2,289.2	2,253.1	2,205.2	5.7	9.5	-2.98	6.9	-476.3	344.0	333.4	10.64	32.326		
2,400.0	2,387.8	2,352.8	2,301.9	6.0	10.1	-3.05	7.3	-500.7	352.1	340.9	11.16	31.550		
2,500.0	2,486.4	2,452.4	2,398.6	6.4	10.6	-3.12	7.7	-525.0	360.1	348.4	11.68	30.839		
2,600.0	2,585.0	2,552.1	2,495.2	6.7	11.1	-3.19	8.1	-549.3	368.1	355.9	12.19	30.183		
2,700.0	2,683.6	2,651.8	2,591.9	7.1	11.6	-3.25	8.5	-573.6	376.1	363.4	12.71	29.578		
2,800.0	2,782.3	2,751.5	2,688.6	7.4	12.2	-3.31	8.9	-597.9	384.1	370.9	13.24	29.017		
2,900.0	2,880.9	2,851.2	2,785.2	7.8	12.7	-3.37	9.3	-622.3	392.1	378.3	13.76	28.497		
3,000.0	2,979.5	2,950.8	2,881.9	8.2	13.2	-3.43	9.7	-646.6	400.1	385.8	14.28	28.013		
3,100.0	3,078.2	3,050.5	2,978.5	8.5	13.8	-3.48	10.1	-670.9	408.6	393.8	14.80	27.614		
3,200.0	3,177.3	3,149.8	3,074.8	8.8	14.3	-3.52	10.5	-695.1	420.2	405.0	15.27	27.522		
3,300.0	3,276.9	3,248.6	3,170.7	9.0	14.8	-3.53	10.9	-719.2	435.3	419.6	15.71	27.699		
3,400.0	3,376.7	3,346.9	3,266.0	9.2	15.3	-3.52	11.3	-743.2	453.8	437.6	16.13	28.127		
3,500.0	3,476.7	3,444.5	3,360.6	9.4	15.8	-3.49	11.7	-767.0	475.7	459.2	16.52	28.789		
3,600.0	3,576.7	3,541.5	3,454.7	9.5	16.4	-90.45	12.1	-790.7	500.0	483.0	16.96	29.473		
3,700.0	3,676.7	3,638.5	3,548.7	9.7	16.9	-90.38	12.5	-814.3	524.4	506.9	17.44	30.071		
3,800.0	3,776.7	3,735.4	3,642.8	9.9	17.4	-90.32	12.9	-838.0	548.8	530.9	17.91	30.636		
3,900.0	3,876.7	3,832.4	3,736.8	10.1	17.9	-90.27	13.3	-861.6	573.2	554.8	18.39	31.170		
4,000.0	3,976.7	3,929.4	3,830.9	10.3	18.4	-90.22	13.7	-885.3	597.6	578.7	18.87	31.675		
4,100.0	4,076.7	4,026.4	3,924.9	10.4	18.9	-90.17	14.1	-909.0	622.0	602.6	19.34	32.154		
4,200.0	4,176.7	4,123.3	4,019.0	10.6	19.5	-90.13	14.5	-932.6	646.4	626.5	19.82	32.609		
4,300.0	4,276.7	4,220.3	4,113.0	10.8	20.0	-90.09	14.9	-956.3	670.8	650.5	20.30	33.041		
4,400.0	4,376.7	4,317.3	4,207.1	11.0	20.5	-90.05	15.3	-979.9	695.1	674.4	20.78	33.452		
4,500.0	4,476.7	4,414.3	4,301.2	11.2	21.0	-90.02	15.7	-1,003.6	719.5	698.3	21.26	33.844		
4,600.0	4,576.7	4,545.2	4,428.8	11.4	21.5	-89.98	16.1	-1,032.6	741.7	719.9	21.78	34.048		
4,700.0	4,676.7	4,678.6	4,560.1	11.6	21.9	-89.95	16.5	-1,056.2	759.4	737.1	22.28	34.086		
4,800.0	4,776.7	4,813.9	4,694.2	11.8	22.3	-89.93	16.8	-1,073.8	772.4	749.6	22.76	33.944		
4,900.0	4,876.7	4,950.6	4,830.5	12.0	22.5	-89.92	17.0	-1,085.1	780.7	757.5	23.21	33.634		
5,000.0	4,976.7	5,088.1	4,967.9	12.1	22.7	-89.91	17.1	-1,090.0	784.2	760.6	23.65	33.162		
5,100.0	5,076.7	5,196.9	5,076.7	12.3	22.8	-89.91	17.1	-1,090.1	784.4	760.3	24.04	32.626		
5,200.0	5,176.7	5,296.9	5,176.7	12.5	22.9	-89.91	17.1	-1,090.1	784.4	759.9	24.42	32.114		
5,300.0	5,276.7	5,396.9	5,276.7	12.7	23.0	-89.91	17.1	-1,090.1	784.4	759.5	24.81	31.615		
5,400.0	5,376.7	5,496.9	5,376.7	12.9	23.1	-89.91	17.1	-1,090.1	784.4	759.2	25.20	31.128		
5,500.0	5,476.7	5,596.9	5,476.7	13.1	23.2	-89.91	17.1	-1,090.1	784.4	758.8	25.59	30.655		
5,600.0	5,576.7	5,696.9	5,576.7	13.3	23.4	-89.91	17.1	-1,090.1	784.4	758.4	25.98	30.193		
5,700.0	5,676.7	5,796.9	5,676.7	13.5	23.5	-89.91	17.1	-1,090.1	784.4	758.0	26.37	29.743		
5,800.0	5,776.7	5,896.9	5,776.7	13.7	23.6	-89.91	17.1	-1,090.1	784.4	757.6	26.77	29.305		
5,900.0	5,876.7	5,996.9	5,876.7	13.9	23.7	-89.91	17.1	-1,090.1	784.4	757.2	27.16	28.877		
6,000.0	5,976.7	6,096.9	5,976.7	14.1	23.8	-89.91	17.1	-1,090.1	784.4	756.8	27.56	28.461		
6,100.0	6,076.7	6,196.9	6,076.7	14.4	23.9	-89.91	17.1	-1,090.1	784.4	756.4	27.96	28.055		
6,200.0	6,176.7	6,296.9	6,176.7	14.6	24.1	-89.91	17.1	-1,090.1	784.4	756.0	28.36	27.658		
6,262.5	6,239.1	6,359.5	6,239.2	14.7	24.1	90.07	15.6	-1,090.1	784.3	755.7	28.60	27.422		
6,300.0	6,276.7	6,396.8	6,276.3	14.8	24.2	89.81	12.3	-1,090.1	784.4	755.6	28.75	27.285		
6,400.0	6,376.2	6,495.4	6,373.3	14.9	24.3	89.15	-5.0	-1,090.1	784.4	755.4	29.09	26.967		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

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Project:	SEC.27-T7N-R64W	TVD Reference:	WELL @ 4883.0ft (RKB - 13')
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Site Error:	0.0ft	North Reference:	True
Reference Well:	Richter 34R-343	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #2 (7-25-13)	Offset TVD Reference:	Offset Datum

Offset Design Richter 27T-HZ Pad Sec.27-T7N-R64W - Richter 34M-203 - Wellbore #1 - Plan #1 (9-27-12)													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Semi Major Axis	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
6,500.0	6,473.8	6,592.9	6,466.3	15.1	24.4	88.50		-34.3	-1,090.1	784.6	755.2	29.43	26.659	
6,600.0	6,567.8	6,689.3	6,553.8	15.3	24.5	87.88		-74.6	-1,090.1	784.9	755.1	29.81	26.330	
6,700.0	6,656.5	6,784.8	6,634.8	15.5	24.6	87.30		-125.1	-1,090.1	785.3	755.0	30.27	25.940	
6,800.0	6,738.5	6,879.5	6,708.2	15.7	24.8	86.77		-184.7	-1,090.0	785.7	754.8	30.88	25.442	
6,900.0	6,812.3	6,973.4	6,773.2	16.0	25.0	86.29		-252.4	-1,090.0	786.1	754.4	31.70	24.797	
7,000.0	6,876.7	7,066.6	6,829.1	16.5	25.3	85.87		-326.9	-1,089.9	786.6	753.8	32.80	23.984	
7,100.0	6,930.5	7,159.2	6,875.2	17.1	25.6	85.51		-407.2	-1,089.9	787.0	752.8	34.20	23.010	
7,200.0	6,972.9	7,250.0	6,910.6	17.9	26.1	85.24		-490.7	-1,089.8	787.3	751.4	35.92	21.917	
7,300.0	7,003.2	7,343.4	6,936.5	18.9	26.6	85.03		-580.4	-1,089.8	787.6	749.6	38.00	20.728	
7,400.0	7,020.7	7,435.0	6,951.0	20.1	27.2	84.90		-670.8	-1,089.7	787.8	747.5	40.34	19.531	
7,500.0	7,025.4	7,527.5	6,954.7	21.3	28.0	84.85		-763.2	-1,089.7	787.9	745.0	42.89	18.371	
7,600.0	7,025.1	7,627.5	6,954.0	22.7	28.9	84.82		-863.2	-1,089.6	788.0	742.4	45.59	17.284	
7,700.0	7,024.9	7,727.5	6,953.3	24.1	30.0	84.79		-963.2	-1,089.5	788.1	739.6	48.44	16.270	
7,800.0	7,024.7	7,827.5	6,952.6	25.6	31.1	84.76		-1,063.2	-1,089.5	788.2	736.7	51.42	15.329	
7,900.0	7,024.4	7,927.5	6,951.9	27.1	32.4	84.72		-1,163.2	-1,089.4	788.3	733.8	54.50	14.463	
8,000.0	7,024.2	8,027.5	6,951.2	28.7	33.7	84.69		-1,263.2	-1,089.4	788.3	730.7	57.67	13.669	
8,100.0	7,023.9	8,127.5	6,950.5	30.3	35.0	84.66		-1,363.2	-1,089.3	788.4	727.5	60.92	12.941	
8,200.0	7,023.7	8,227.5	6,949.8	32.0	36.5	84.63		-1,463.2	-1,089.2	788.5	724.3	64.24	12.275	
8,300.0	7,023.4	8,327.5	6,949.1	33.7	37.9	84.59		-1,563.2	-1,089.2	788.6	721.0	67.61	11.665	
8,400.0	7,023.2	8,427.5	6,948.4	35.4	39.4	84.56		-1,663.2	-1,089.1	788.7	717.7	71.02	11.105	
8,500.0	7,022.9	8,527.5	6,947.7	37.1	41.0	84.53		-1,763.2	-1,089.0	788.8	714.3	74.48	10.591	
8,600.0	7,022.7	8,627.5	6,947.0	38.9	42.6	84.50		-1,863.2	-1,089.0	788.9	710.9	77.97	10.118	
8,700.0	7,022.5	8,727.5	6,946.3	40.6	44.2	84.46		-1,963.2	-1,088.9	789.0	707.5	81.49	9.682	
8,800.0	7,022.2	8,827.5	6,945.6	42.4	45.8	84.43		-2,063.2	-1,088.9	789.1	704.0	85.04	9.279	
8,900.0	7,022.0	8,927.5	6,944.9	44.2	47.5	84.40		-2,163.2	-1,088.8	789.2	700.6	88.61	8.906	
9,000.0	7,021.7	9,027.5	6,944.2	46.0	49.2	84.37		-2,263.2	-1,088.7	789.3	697.1	92.20	8.560	
9,100.0	7,021.5	9,127.5	6,943.6	47.8	50.9	84.33		-2,363.2	-1,088.7	789.3	693.5	95.81	8.239	
9,200.0	7,021.2	9,227.5	6,942.9	49.6	52.6	84.30		-2,463.2	-1,088.6	789.4	690.0	99.43	7.939	
9,300.0	7,021.0	9,327.5	6,942.2	51.5	54.3	84.27		-2,563.1	-1,088.5	789.5	686.5	103.07	7.660	
9,400.0	7,020.8	9,427.5	6,941.5	53.3	56.1	84.24		-2,663.1	-1,088.5	789.6	682.9	106.72	7.399	
9,500.0	7,020.5	9,527.5	6,940.8	55.2	57.8	84.20		-2,763.1	-1,088.4	789.7	679.3	110.39	7.154	
9,600.0	7,020.3	9,627.5	6,940.1	57.0	59.6	84.17		-2,863.1	-1,088.4	789.8	675.7	114.06	6.924	
9,700.0	7,020.0	9,727.5	6,939.4	58.9	61.4	84.14		-2,963.1	-1,088.3	789.9	672.2	117.75	6.709	
9,800.0	7,019.8	9,827.5	6,938.7	60.7	63.2	84.11		-3,063.1	-1,088.2	790.0	668.6	121.44	6.505	
9,900.0	7,019.5	9,927.5	6,938.0	62.6	65.0	84.07		-3,163.1	-1,088.2	790.1	665.0	125.14	6.314	
10,000.0	7,019.3	10,027.5	6,937.3	64.4	66.8	84.04		-3,263.1	-1,088.1	790.2	661.3	128.85	6.133	
10,100.0	7,019.0	10,127.5	6,936.6	66.3	68.6	84.01		-3,363.1	-1,088.0	790.3	657.7	132.56	5.962	
10,200.0	7,018.8	10,227.5	6,935.9	68.2	70.4	83.98		-3,463.1	-1,088.0	790.4	654.1	136.28	5.800	
10,300.0	7,018.6	10,327.5	6,935.2	70.0	72.2	83.95		-3,563.1	-1,087.9	790.5	650.5	140.00	5.646	
10,400.0	7,018.3	10,427.5	6,934.5	71.9	74.0	83.91		-3,663.1	-1,087.9	790.6	646.8	143.73	5.500	
10,500.0	7,018.1	10,527.5	6,933.8	73.8	75.9	83.88		-3,763.1	-1,087.8	790.7	643.2	147.47	5.362	
10,600.0	7,017.8	10,627.5	6,933.1	75.7	77.7	83.85		-3,863.1	-1,087.7	790.8	639.6	151.20	5.230	
10,700.0	7,017.6	10,727.5	6,932.4	77.6	79.6	83.82		-3,963.1	-1,087.7	790.9	635.9	154.95	5.104	
10,800.0	7,017.3	10,827.5	6,931.7	79.4	81.4	83.78		-4,063.1	-1,087.6	791.0	632.3	158.69	4.984	
10,900.0	7,017.1	10,927.5	6,931.0	81.3	83.2	83.75		-4,163.1	-1,087.5	791.1	628.6	162.44	4.870	
11,000.0	7,016.8	11,027.5	6,930.3	83.2	85.1	83.72		-4,263.1	-1,087.5	791.1	625.0	166.19	4.760	
11,100.0	7,016.6	11,127.5	6,929.6	85.1	86.9	83.69		-4,363.1	-1,087.4	791.2	621.3	169.95	4.656	
11,200.0	7,016.4	11,227.5	6,928.9	87.0	88.8	83.65		-4,463.1	-1,087.4	791.3	617.6	173.70	4.556	
11,300.0	7,016.1	11,327.5	6,928.2	88.9	90.7	83.62		-4,563.1	-1,087.3	791.4	614.0	177.46	4.460	
11,400.0	7,015.9	11,427.5	6,927.5	90.8	92.5	83.59		-4,663.1	-1,087.2	791.5	610.3	181.22	4.368	
11,500.0	7,015.6	11,527.5	6,926.8	92.7	94.4	83.56		-4,763.1	-1,087.2	791.6	606.7	184.98	4.279	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Ritcher 34R-343
Project:	SEC.27-T7N-R64W	TVD Reference:	WELL @ 4883.0ft (RKB - 13')
Reference Site:	Richter 27T-HZ Pad Sec.27-T7N-R64W	MD Reference:	WELL @ 4883.0ft (RKB - 13')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Richter 34R-343	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #2 (7-25-13)	Offset TVD Reference:	Offset Datum

Offset Design Richter 27T-HZ Pad Sec.27-T7N-R64W - Richter 34M-203 - Wellbore #1 - Plan #1 (9-27-12)												Offset Site Error:	0.0 ft
Survey Program: 0-MWD												Offset Well Error:	0.0 ft
Reference	Offset	Semi Major Axis		Distance									
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
11,600.0	7,015.4	11,627.5	6,926.1	94.6	96.3	83.53	-4,863.1	-1,087.1	791.7	603.0	188.75	4.195	
11,700.0	7,015.1	11,727.5	6,925.4	96.5	98.1	83.49	-4,963.1	-1,087.0	791.8	599.3	192.52	4.113	
11,753.5	7,015.0	11,781.0	6,925.0	97.5	99.1	83.48	-5,016.5	-1,087.0	791.9	597.4	194.53	4.071 SF	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Ritcher 34R-343
Project:	SEC.27-T7N-R64W	TVD Reference:	WELL @ 4883.0ft (RKB - 13')
Reference Site:	Richter 27T-HZ Pad Sec.27-T7N-R64W	MD Reference:	WELL @ 4883.0ft (RKB - 13')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Richter 34R-343	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #2 (7-25-13)	Offset TVD Reference:	Offset Datum

Offset Design Richter 27T-HZ Pad Sec.27-T7N-R64W - Richter 34M-423 - Wellbore #1 - Plan #1 (9-28-12)													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Semi Major Axis (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	-89.99	-89.99	0.0	-30.6	30.6				
100.0	100.0	100.0	100.0	0.1	0.1	-89.99	-89.99	0.0	-30.6	30.6	30.4	0.22	136.030	
200.0	200.0	200.0	200.0	0.3	0.3	-89.99	-89.99	0.0	-30.6	30.6	29.9	0.67	45.343	
300.0	300.0	300.0	300.0	0.6	0.6	-89.99	-89.99	0.0	-30.6	30.6	29.5	1.12	27.206	
400.0	400.0	400.0	400.0	0.8	0.8	-89.99	-89.99	0.0	-30.6	30.6	29.0	1.57	19.433	
500.0	500.0	500.0	500.0	1.0	1.0	-89.99	-89.99	0.0	-30.6	30.6	28.6	2.02	15.114	
600.0	600.0	600.0	600.0	1.2	1.2	-89.99	-89.99	0.0	-30.6	30.6	28.1	2.47	12.366	
700.0	700.0	700.0	700.0	1.5	1.5	-89.99	-89.99	0.0	-30.6	30.6	27.7	2.92	10.464	
800.0	800.0	800.0	800.0	1.7	1.7	-89.99	-89.99	0.0	-30.6	30.6	27.2	3.37	9.069	
900.0	900.0	900.0	900.0	1.9	1.9	-89.99	-89.99	0.0	-30.6	30.6	26.8	3.82	8.002	
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	-89.99	-89.99	0.0	-30.6	30.6	26.3	4.27	7.159 CC, ES	
1,100.0	1,100.0	1,098.9	1,098.9	2.4	2.3	-90.32	-90.32	-0.2	-32.3	32.3	27.6	4.70	6.866	
1,200.0	1,200.0	1,197.6	1,197.4	2.6	2.5	-91.12	-91.12	-0.7	-37.3	37.4	32.3	5.13	7.300	
1,300.0	1,300.0	1,295.9	1,295.4	2.8	2.8	-5.21	-5.21	-1.6	-45.8	44.3	38.8	5.53	8.001	
1,400.0	1,399.8	1,394.1	1,392.8	3.0	3.0	-6.63	-6.63	-2.9	-57.5	51.1	45.2	5.93	8.613	
1,500.0	1,499.5	1,492.1	1,489.6	3.2	3.3	-8.25	-8.25	-4.5	-72.5	57.9	51.6	6.33	9.140	
1,600.0	1,598.7	1,591.9	1,588.0	3.5	3.6	-10.07	-10.07	-6.4	-89.3	62.9	56.1	6.74	9.325	
1,700.0	1,697.5	1,691.9	1,686.6	3.7	3.9	-12.23	-12.23	-8.2	-106.2	64.6	57.4	7.16	9.016	
1,800.0	1,796.1	1,791.8	1,785.1	4.0	4.2	-14.51	-14.51	-10.0	-123.0	65.4	57.7	7.62	8.581	
1,900.0	1,894.7	1,891.8	1,883.6	4.3	4.5	-16.73	-16.73	-11.8	-139.9	66.3	58.2	8.09	8.194	
2,000.0	1,993.3	1,991.7	1,982.1	4.6	4.9	-18.89	-18.89	-13.7	-156.7	67.2	58.7	8.57	7.847	
2,100.0	2,091.9	2,091.7	2,080.6	5.0	5.3	-20.98	-20.98	-15.5	-173.5	68.3	59.3	9.07	7.534	
2,200.0	2,190.6	2,191.7	2,179.1	5.3	5.6	-23.01	-23.01	-17.3	-190.4	69.5	59.9	9.58	7.252	
2,300.0	2,289.2	2,291.6	2,277.7	5.7	6.0	-24.97	-24.97	-19.1	-207.2	70.7	60.6	10.11	6.994	
2,400.0	2,387.8	2,391.6	2,376.2	6.0	6.4	-26.85	-26.85	-20.9	-224.1	72.1	61.4	10.66	6.760	
2,500.0	2,486.4	2,491.6	2,474.7	6.4	6.7	-28.67	-28.67	-22.8	-240.9	73.5	62.3	11.23	6.545	
2,600.0	2,585.0	2,591.5	2,573.2	6.7	7.1	-30.42	-30.42	-24.6	-257.8	75.0	63.1	11.81	6.348	
2,700.0	2,683.6	2,691.5	2,671.7	7.1	7.5	-32.10	-32.10	-26.4	-274.6	76.5	64.1	12.40	6.167	
2,800.0	2,782.3	2,791.5	2,770.2	7.4	7.9	-33.71	-33.71	-28.2	-291.5	78.1	65.1	13.02	6.001	
2,900.0	2,880.9	2,891.4	2,868.8	7.8	8.3	-35.25	-35.25	-30.1	-308.3	79.8	66.1	13.64	5.847	
3,000.0	2,979.5	2,991.4	2,967.3	8.2	8.6	-36.73	-36.73	-31.9	-325.2	81.5	67.2	14.29	5.705	
3,100.0	3,078.2	3,091.3	3,065.8	8.5	9.0	-37.95	-37.95	-33.7	-342.0	83.7	68.8	14.92	5.608	
3,200.0	3,177.3	3,191.2	3,164.2	8.8	9.4	-37.87	-37.87	-35.5	-358.9	88.3	72.9	15.43	5.723	
3,300.0	3,276.9	3,290.9	3,262.5	9.0	9.8	-36.56	-36.56	-37.4	-375.7	95.7	79.9	15.84	6.045	
3,400.0	3,376.7	3,390.3	3,360.4	9.2	10.2	-34.39	-34.39	-39.2	-392.4	106.1	89.9	16.16	6.564	
3,500.0	3,476.7	3,489.2	3,457.9	9.4	10.6	-31.75	-31.75	-41.0	-409.1	119.5	103.1	16.42	7.277	
3,600.0	3,576.7	3,587.8	3,555.1	9.5	11.0	-116.07	-116.07	-42.8	-425.7	135.2	118.5	16.69	8.104	
3,700.0	3,676.7	3,686.4	3,652.2	9.7	11.3	-113.89	-113.89	-44.6	-442.3	151.3	134.3	17.02	8.890	
3,800.0	3,776.7	3,784.9	3,749.3	9.9	11.7	-112.13	-112.13	-46.4	-458.9	167.5	150.2	17.38	9.640	
3,900.0	3,876.7	3,883.5	3,846.4	10.1	12.1	-110.68	-110.68	-48.2	-475.5	183.9	166.2	17.76	10.355	
4,000.0	3,976.7	3,982.0	3,943.6	10.3	12.5	-109.47	-109.47	-50.0	-492.1	200.4	182.2	18.16	11.035	
4,100.0	4,076.7	4,080.6	4,040.7	10.4	12.9	-108.44	-108.44	-51.8	-508.7	216.9	198.4	18.57	11.683	
4,200.0	4,176.7	4,179.1	4,137.8	10.6	13.3	-107.56	-107.56	-53.6	-525.4	233.5	214.6	18.99	12.300	
4,300.0	4,276.7	4,277.7	4,234.9	10.8	13.7	-106.79	-106.79	-55.4	-542.0	250.2	230.8	19.41	12.888	
4,400.0	4,376.7	4,376.2	4,332.1	11.0	14.0	-106.12	-106.12	-57.2	-558.6	266.9	247.0	19.84	13.449	
4,500.0	4,476.7	4,474.8	4,429.2	11.2	14.4	-105.53	-105.53	-59.0	-575.2	283.6	263.3	20.28	13.985	
4,600.0	4,576.7	4,574.7	4,527.7	11.4	14.8	-105.00	-105.00	-60.8	-592.0	300.3	279.6	20.72	14.495	
4,700.0	4,676.7	4,685.4	4,637.2	11.6	15.1	-104.54	-104.54	-62.5	-608.0	314.7	293.6	21.15	14.883	
4,800.0	4,776.7	4,797.2	4,748.4	11.8	15.4	-104.24	-104.24	-63.8	-620.0	325.4	303.8	21.57	15.084	
4,900.0	4,876.7	4,909.8	4,860.7	12.0	15.6	-104.05	-104.05	-64.6	-627.6	332.1	310.1	21.99	15.105	
5,000.0	4,976.7	5,022.8	4,973.6	12.1	15.8	-103.97	-103.97	-65.0	-630.9	335.0	312.6	22.40	14.955	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Ritcher 34R-343
Project:	SEC.27-T7N-R64W	TVD Reference:	WELL @ 4883.0ft (RKB - 13')
Reference Site:	Richter 27T-HZ Pad Sec.27-T7N-R64W	MD Reference:	WELL @ 4883.0ft (RKB - 13')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Richter 34R-343	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #2 (7-25-13)	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Distance		Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)		Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)						
5,100.0	5,076.7	5,125.9	5,076.7	12.3	15.9	-103.97	-65.0	-631.0	335.1	312.3	22.81	14.693		
5,200.0	5,176.7	5,225.9	5,176.7	12.5	16.1	-103.97	-65.0	-631.0	335.1	311.9	23.21	14.436		
5,300.0	5,276.7	5,325.9	5,276.7	12.7	16.2	-103.97	-65.0	-631.0	335.1	311.5	23.62	14.187		
5,400.0	5,376.7	5,425.9	5,376.7	12.9	16.4	-103.97	-65.0	-631.0	335.1	311.1	24.03	13.945		
5,500.0	5,476.7	5,525.9	5,476.7	13.1	16.5	-103.97	-65.0	-631.0	335.1	310.6	24.44	13.711		
5,600.0	5,576.7	5,625.9	5,576.7	13.3	16.7	-103.97	-65.0	-631.0	335.1	310.2	24.85	13.484		
5,700.0	5,676.7	5,725.9	5,676.7	13.5	16.8	-103.97	-65.0	-631.0	335.1	309.8	25.26	13.263		
5,800.0	5,776.7	5,825.9	5,776.7	13.7	17.0	-103.97	-65.0	-631.0	335.1	309.4	25.68	13.049		
5,900.0	5,876.7	5,925.9	5,876.7	13.9	17.1	-103.97	-65.0	-631.0	335.1	309.0	26.09	12.841		
6,000.0	5,976.7	6,025.9	5,976.7	14.1	17.3	-103.97	-65.0	-631.0	335.1	308.6	26.51	12.639		
6,100.0	6,076.7	6,125.9	6,076.7	14.4	17.5	-103.97	-65.0	-631.0	335.1	308.2	26.93	12.443		
6,200.0	6,176.7	6,225.9	6,176.7	14.6	17.6	-103.97	-65.0	-631.0	335.1	307.7	27.35	12.253		
6,300.0	6,276.7	6,325.8	6,276.7	14.8	17.8	76.12	-65.0	-631.0	335.1	307.3	27.77	12.064		
6,400.0	6,376.2	6,421.8	6,376.2	14.9	17.9	77.43	-65.9	-631.0	333.3	305.2	28.12	11.853		
6,500.0	6,473.8	6,513.1	6,463.3	15.1	18.1	79.25	-75.8	-631.0	331.2	302.7	28.41	11.656		
6,600.0	6,567.8	6,605.6	6,553.3	15.3	18.3	81.26	-96.8	-631.0	329.2	300.4	28.73	11.458		
6,700.0	6,656.5	6,700.0	6,641.9	15.5	18.4	83.46	-129.3	-631.0	327.5	298.4	29.16	11.232		
6,800.0	6,738.5	6,794.5	6,725.9	15.7	18.7	85.77	-172.5	-631.0	326.3	296.5	29.77	10.961		
6,900.0	6,812.3	6,891.3	6,805.7	16.0	19.0	88.19	-227.1	-631.0	325.6	295.0	30.62	10.635		
6,961.4	6,853.0	6,951.6	6,851.7	16.3	19.2	89.70	-266.0	-631.0	325.5	294.2	31.28	10.405		
7,000.0	6,876.7	6,989.8	6,879.2	16.5	19.3	90.66	-292.6	-631.0	325.5	293.8	31.73	10.261		
7,100.0	6,930.5	7,090.2	6,944.8	17.1	19.8	93.14	-368.5	-631.0	326.1	293.0	33.10	9.853		
7,200.0	6,972.9	7,192.6	7,000.8	17.9	20.4	95.58	-454.1	-631.0	327.3	292.6	34.70	9.433		
7,300.0	7,003.2	7,296.9	7,045.7	18.9	21.2	97.93	-548.2	-631.0	329.0	292.5	36.48	9.018		
7,400.0	7,020.7	7,403.4	7,077.8	20.1	22.2	100.14	-649.6	-631.0	331.2	292.8	38.42	8.620		
7,500.0	7,025.4	7,511.2	7,095.7	21.3	23.3	102.16	-755.8	-631.0	333.6	293.1	40.48	8.241		
7,600.0	7,025.1	7,613.1	7,105.8	22.7	24.5	103.89	-857.2	-631.0	336.0	293.2	42.83	7.845		
7,700.0	7,024.9	7,719.2	7,109.0	24.1	25.9	104.45	-963.3	-631.0	336.9	291.3	45.59	7.391		
7,800.0	7,024.7	7,819.2	7,108.9	25.6	27.3	104.47	-1,063.3	-631.0	337.1	288.6	48.49	6.951		
7,900.0	7,024.4	7,919.2	7,108.8	27.1	28.7	104.49	-1,163.3	-631.0	337.2	285.7	51.51	6.547		
8,000.0	7,024.2	8,019.2	7,108.7	28.7	30.2	104.51	-1,263.3	-631.0	337.3	282.7	54.61	6.178		
8,100.0	7,023.9	8,119.2	7,108.6	30.3	31.7	104.52	-1,363.3	-631.0	337.5	279.7	57.79	5.840		
8,200.0	7,023.7	8,219.2	7,108.5	32.0	33.3	104.54	-1,463.3	-631.0	337.6	276.6	61.03	5.533		
8,300.0	7,023.4	8,319.2	7,108.4	33.7	34.9	104.56	-1,563.3	-631.0	337.8	273.5	64.32	5.251		
8,400.0	7,023.2	8,419.2	7,108.3	35.4	36.6	104.58	-1,663.3	-631.0	337.9	270.3	67.66	4.994		
8,500.0	7,022.9	8,519.2	7,108.2	37.1	38.3	104.60	-1,763.3	-631.0	338.1	267.0	71.04	4.759		
8,600.0	7,022.7	8,619.2	7,108.1	38.9	39.9	104.62	-1,863.3	-631.0	338.2	263.8	74.46	4.543		
8,700.0	7,022.5	8,719.2	7,108.0	40.6	41.7	104.64	-1,963.3	-631.0	338.4	260.5	77.90	4.344		
8,800.0	7,022.2	8,819.2	7,107.9	42.4	43.4	104.66	-2,063.3	-631.0	338.5	257.2	81.37	4.160		
8,900.0	7,022.0	8,919.2	7,107.8	44.2	45.1	104.68	-2,163.3	-631.0	338.7	253.8	84.86	3.991		
9,000.0	7,021.7	9,019.2	7,107.7	46.0	46.9	104.70	-2,263.3	-631.0	338.8	250.4	88.37	3.834		
9,100.0	7,021.5	9,119.2	7,107.6	47.8	48.7	104.72	-2,363.3	-631.0	339.0	247.1	91.89	3.689		
9,200.0	7,021.2	9,219.2	7,107.5	49.6	50.5	104.74	-2,463.3	-631.0	339.1	243.7	95.43	3.553		
9,300.0	7,021.0	9,319.2	7,107.4	51.5	52.3	104.76	-2,563.3	-631.0	339.2	240.3	98.99	3.427		
9,400.0	7,020.8	9,419.2	7,107.3	53.3	54.1	104.77	-2,663.3	-631.0	339.4	236.8	102.56	3.309		
9,500.0	7,020.5	9,519.2	7,107.2	55.2	55.9	104.79	-2,763.3	-631.0	339.5	233.4	106.14	3.199		
9,600.0	7,020.3	9,619.2	7,107.1	57.0	57.7	104.81	-2,863.3	-631.0	339.7	230.0	109.72	3.096		
9,700.0	7,020.0	9,719.2	7,107.0	58.9	59.5	104.83	-2,963.3	-631.0	339.8	226.5	113.32	2.999		
9,800.0	7,019.8	9,819.2	7,106.9	60.7	61.4	104.85	-3,063.3	-631.0	340.0	223.1	116.93	2.908		
9,900.0	7,019.5	9,919.2	7,106.8	62.6	63.2	104.87	-3,163.3	-631.0	340.1	219.6	120.54	2.822		
10,000.0	7,019.3	10,019.2	7,106.7	64.4	65.0	104.89	-3,263.3	-631.0	340.3	216.1	124.16	2.741		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Richter 34R-343
Project:	SEC.27-T7N-R64W	TVD Reference:	WELL @ 4883.0ft (RKB - 13')
Reference Site:	Richter 27T-HZ Pad Sec.27-T7N-R64W	MD Reference:	WELL @ 4883.0ft (RKB - 13')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Richter 34R-343	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #2 (7-25-13)	Offset TVD Reference:	Offset Datum

Offset Design Richter 27T-HZ Pad Sec.27-T7N-R64W - Richter 34M-423 - Wellbore #1 - Plan #1 (9-28-12)												Offset Site Error:	0.0 ft
Survey Program: 0-MWD												Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Distance		Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)		Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)					
10,100.0	7,019.0	10,119.2	7,106.6	66.3	66.9	104.91	-3,363.3	-631.0	340.4	212.6	127.78	2.664	
10,200.0	7,018.8	10,219.2	7,106.5	68.2	68.7	104.93	-3,463.3	-631.0	340.6	209.2	131.41	2.592	
10,300.0	7,018.6	10,319.2	7,106.4	70.0	70.6	104.95	-3,563.3	-631.0	340.7	205.7	135.04	2.523	
10,400.0	7,018.3	10,419.2	7,106.3	71.9	72.5	104.96	-3,663.3	-631.0	340.9	202.2	138.68	2.458	
10,500.0	7,018.1	10,519.2	7,106.2	73.8	74.3	104.98	-3,763.3	-631.0	341.0	198.7	142.33	2.396	
10,600.0	7,017.8	10,619.2	7,106.1	75.7	76.2	105.00	-3,863.3	-631.0	341.2	195.2	145.97	2.337	
10,700.0	7,017.6	10,719.2	7,106.0	77.6	78.1	105.02	-3,963.3	-631.1	341.3	191.7	149.62	2.281	
10,800.0	7,017.3	10,819.2	7,105.9	79.4	79.9	105.04	-4,063.3	-631.1	341.4	188.2	153.27	2.228	
10,900.0	7,017.1	10,919.2	7,105.8	81.3	81.8	105.06	-4,163.3	-631.1	341.6	184.7	156.93	2.177	
11,000.0	7,016.8	11,019.2	7,105.7	83.2	83.7	105.08	-4,263.3	-631.1	341.7	181.2	160.59	2.128	
11,100.0	7,016.6	11,119.2	7,105.6	85.1	85.6	105.10	-4,363.3	-631.1	341.9	177.6	164.25	2.082	
11,200.0	7,016.4	11,219.2	7,105.5	87.0	87.4	105.12	-4,463.3	-631.1	342.0	174.1	167.91	2.037	
11,300.0	7,016.1	11,319.2	7,105.4	88.9	89.3	105.13	-4,563.3	-631.1	342.2	170.6	171.58	1.994	
11,400.0	7,015.9	11,419.2	7,105.3	90.8	91.2	105.15	-4,663.3	-631.1	342.3	167.1	175.24	1.953	
11,500.0	7,015.6	11,519.2	7,105.3	92.7	93.1	105.17	-4,763.3	-631.1	342.5	163.6	178.91	1.914	
11,600.0	7,015.4	11,619.2	7,105.2	94.6	95.0	105.19	-4,863.3	-631.1	342.6	160.0	182.58	1.877	
11,700.0	7,015.1	11,719.2	7,105.1	96.5	96.9	105.21	-4,963.3	-631.1	342.8	156.5	186.25	1.840	
11,753.5	7,015.0	11,772.7	7,105.0	97.5	97.9	105.22	-5,016.8	-631.1	342.9	154.6	188.22	1.822 SF	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Ritcher 34R-343
Project:	SEC.27-T7N-R64W	TVD Reference:	WELL @ 4883.0ft (RKB - 13')
Reference Site:	Richter 27T-HZ Pad Sec.27-T7N-R64W	MD Reference:	WELL @ 4883.0ft (RKB - 13')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Richter 34R-343	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #2 (7-25-13)	Offset TVD Reference:	Offset Datum

Offset Design Richter 27T-HZ Pad Sec.27-T7N-R64W - Richter 34R-223 - Wellbore #1 - Plan #1 (9-27-12)													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
0.0	0.0	0.0	0.0	0.0	0.0	86.58	3.7	61.1	61.3					
100.0	100.0	100.0	100.0	0.1	0.1	86.58	3.7	61.1	61.3	61.0	0.22	272.545		
200.0	200.0	200.0	200.0	0.3	0.3	86.58	3.7	61.1	61.3	60.6	0.67	90.848		
300.0	300.0	300.0	300.0	0.6	0.6	86.58	3.7	61.1	61.3	60.1	1.12	54.509		
400.0	400.0	400.0	400.0	0.8	0.8	86.58	3.7	61.1	61.3	59.7	1.57	38.935		
500.0	500.0	500.0	500.0	1.0	1.0	86.58	3.7	61.1	61.3	59.2	2.02	30.283		
600.0	600.0	600.0	600.0	1.2	1.2	86.58	3.7	61.1	61.3	58.8	2.47	24.777		
700.0	700.0	700.0	700.0	1.5	1.5	86.58	3.7	61.1	61.3	58.3	2.92	20.965		
800.0	800.0	800.0	800.0	1.7	1.7	86.58	3.7	61.1	61.3	57.9	3.37	18.170		
900.0	900.0	900.0	900.0	1.9	1.9	86.58	3.7	61.1	61.3	57.4	3.82	16.032		
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	86.58	3.7	61.1	61.3	57.0	4.27	14.344		
1,100.0	1,100.0	1,100.0	1,100.0	2.4	2.4	86.58	3.7	61.1	61.3	56.5	4.72	12.978		
1,200.0	1,200.0	1,200.0	1,200.0	2.6	2.6	86.58	3.7	61.1	61.3	56.1	5.17	11.850 CC, ES		
1,300.0	1,300.0	1,297.8	1,297.8	2.8	2.8	173.74	3.8	62.8	64.7	59.1	5.59	11.579		
1,400.0	1,399.8	1,394.9	1,394.7	3.0	3.0	174.05	4.2	67.8	75.0	69.0	5.99	12.529		
1,500.0	1,499.5	1,490.6	1,490.1	3.2	3.2	174.41	4.8	75.8	92.1	85.7	6.38	14.420		
1,600.0	1,598.7	1,584.4	1,583.2	3.5	3.4	174.73	5.7	86.8	115.8	109.0	6.78	17.075		
1,700.0	1,697.5	1,679.4	1,677.3	3.7	3.7	175.02	6.8	100.0	144.8	137.7	7.18	20.175		
1,800.0	1,796.1	1,774.7	1,771.7	4.0	3.9	175.27	7.9	113.2	174.9	167.3	7.59	23.037		
1,900.0	1,894.7	1,870.1	1,866.2	4.3	4.2	175.44	9.0	126.5	205.0	197.0	8.01	25.585		
2,000.0	1,993.3	1,965.5	1,960.6	4.6	4.5	175.58	10.1	139.7	235.1	226.7	8.44	27.863		
2,100.0	2,091.9	2,060.8	2,055.0	5.0	4.7	175.68	11.1	153.0	265.2	256.4	8.87	29.892		
2,200.0	2,190.6	2,156.2	2,149.5	5.3	5.0	175.76	12.2	166.3	295.3	286.0	9.31	31.726		
2,300.0	2,289.2	2,251.5	2,243.9	5.7	5.3	175.82	13.3	179.5	325.4	315.7	9.75	33.381		
2,400.0	2,387.8	2,346.9	2,338.3	6.0	5.6	175.88	14.4	192.8	355.5	345.3	10.19	34.881		
2,500.0	2,486.4	2,442.3	2,432.7	6.4	5.9	175.93	15.5	206.0	385.6	375.0	10.64	36.246		
2,600.0	2,585.0	2,537.6	2,527.2	6.7	6.2	175.96	16.5	219.3	415.7	404.6	11.09	37.491		
2,700.0	2,683.6	2,633.0	2,621.6	7.1	6.5	176.00	17.6	232.5	445.8	434.3	11.54	38.632		
2,800.0	2,782.3	2,728.4	2,716.0	7.4	6.8	176.03	18.7	245.8	475.9	463.9	11.99	39.679		
2,900.0	2,880.9	2,823.7	2,810.5	7.8	7.2	176.06	19.8	259.1	506.0	493.6	12.45	40.644		
3,000.0	2,979.5	2,919.1	2,904.9	8.2	7.5	176.08	20.9	272.3	536.1	523.2	12.91	41.536		
3,100.0	3,078.2	3,014.6	2,999.5	8.5	7.8	176.12	21.9	285.6	565.8	552.4	13.39	42.263		
3,200.0	3,177.3	3,111.0	3,094.9	8.8	8.1	176.15	23.0	299.0	592.4	578.5	13.86	42.751		
3,300.0	3,276.9	3,208.2	3,191.2	9.0	8.4	176.15	24.1	312.5	615.7	601.4	14.31	43.010		
3,400.0	3,376.7	3,306.2	3,288.2	9.2	8.8	176.13	25.2	326.1	635.5	620.8	14.76	43.065		
3,500.0	3,476.7	3,430.2	3,411.2	9.4	9.1	176.08	26.5	341.2	650.3	635.1	15.21	42.747		
3,600.0	3,576.7	3,559.3	3,540.0	9.5	9.4	89.01	27.3	351.3	658.2	642.6	15.65	42.054		
3,700.0	3,676.7	3,689.1	3,669.7	9.7	9.6	88.98	27.6	355.6	661.5	645.4	16.10	41.088		
3,800.0	3,776.7	3,796.1	3,776.7	9.9	9.8	88.98	27.7	355.7	661.7	645.1	16.52	40.063		
3,900.0	3,876.7	3,896.1	3,876.7	10.1	10.0	88.98	27.7	355.7	661.7	644.7	16.93	39.078		
4,000.0	3,976.7	3,996.1	3,976.7	10.3	10.1	88.98	27.7	355.7	661.7	644.3	17.35	38.135		
4,100.0	4,076.7	4,096.1	4,076.7	10.4	10.3	88.98	27.7	355.7	661.7	643.9	17.77	37.233		
4,200.0	4,176.7	4,196.1	4,176.7	10.6	10.5	88.98	27.7	355.7	661.7	643.5	18.19	36.371		
4,300.0	4,276.7	4,296.1	4,276.7	10.8	10.7	88.98	27.7	355.7	661.7	643.0	18.61	35.544		
4,400.0	4,376.7	4,396.1	4,376.7	11.0	10.9	88.98	27.7	355.7	661.7	642.6	19.04	34.753		
4,500.0	4,476.7	4,496.1	4,476.7	11.2	11.1	88.98	27.7	355.7	661.7	642.2	19.46	33.994		
4,600.0	4,576.7	4,596.1	4,576.7	11.4	11.3	88.98	27.7	355.7	661.7	641.8	19.89	33.265		
4,700.0	4,676.7	4,696.1	4,676.7	11.6	11.5	88.98	27.7	355.7	661.7	641.3	20.32	32.566		
4,800.0	4,776.7	4,796.1	4,776.7	11.8	11.7	88.98	27.7	355.7	661.7	640.9	20.75	31.893		
4,900.0	4,876.7	4,896.1	4,876.7	12.0	11.9	88.98	27.7	355.7	661.7	640.5	21.17	31.247		
5,000.0	4,976.7	4,996.1	4,976.7	12.1	12.1	88.98	27.7	355.7	661.7	640.0	21.60	30.625		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Ritcher 34R-343
Project:	SEC.27-T7N-R64W	TVD Reference:	WELL @ 4883.0ft (RKB - 13')
Reference Site:	Richter 27T-HZ Pad Sec.27-T7N-R64W	MD Reference:	WELL @ 4883.0ft (RKB - 13')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Richter 34R-343	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #2 (7-25-13)	Offset TVD Reference:	Offset Datum

Offset Design Richter 27T-HZ Pad Sec.27-T7N-R64W - Richter 34R-223 - Wellbore #1 - Plan #1 (9-27-12)													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
5,100.0	5,076.7	5,096.1	5,076.7	12.3	12.2	88.98	27.7	355.7	661.7	639.6	22.04	30.027		
5,200.0	5,176.7	5,196.1	5,176.7	12.5	12.4	88.98	27.7	355.7	661.7	639.2	22.47	29.450		
5,300.0	5,276.7	5,296.1	5,276.7	12.7	12.6	88.98	27.7	355.7	661.7	638.8	22.90	28.894		
5,400.0	5,376.7	5,396.1	5,376.7	12.9	12.8	88.98	27.7	355.7	661.7	638.3	23.33	28.358		
5,500.0	5,476.7	5,496.1	5,476.7	13.1	13.0	88.98	27.7	355.7	661.7	637.9	23.77	27.841		
5,600.0	5,576.7	5,596.1	5,576.7	13.3	13.2	88.98	27.7	355.7	661.7	637.5	24.20	27.342		
5,700.0	5,676.7	5,696.1	5,676.7	13.5	13.4	88.98	27.7	355.7	661.7	637.0	24.63	26.860		
5,800.0	5,776.7	5,796.1	5,776.7	13.7	13.7	88.98	27.7	355.7	661.7	636.6	25.07	26.394		
5,900.0	5,876.7	5,896.1	5,876.7	13.9	13.9	88.98	27.7	355.7	661.7	636.1	25.50	25.943		
6,000.0	5,976.7	5,996.1	5,976.7	14.1	14.1	88.98	27.7	355.7	661.7	635.7	25.94	25.507		
6,100.0	6,076.7	6,096.1	6,076.7	14.4	14.3	88.98	27.7	355.7	661.7	635.3	26.38	25.085		
6,200.0	6,176.7	6,196.1	6,176.7	14.6	14.5	88.98	27.7	355.7	661.7	634.8	26.81	24.676		
6,300.0	6,276.7	6,297.0	6,277.4	14.8	14.6	-90.54	22.7	355.8	661.6	634.4	27.22	24.304		
6,375.8	6,352.2	6,372.8	6,352.2	14.9	14.8	-89.93	10.4	355.8	661.6	634.1	27.48	24.073		
6,400.0	6,376.2	6,396.8	6,375.6	14.9	14.8	-89.74	5.0	355.8	661.6	634.0	27.56	24.000		
6,500.0	6,473.8	6,495.4	6,469.5	15.1	15.0	-88.94	-25.0	355.8	661.6	633.7	27.91	23.706		
6,600.0	6,567.8	6,592.9	6,557.7	15.3	15.2	-88.16	-66.2	355.8	661.9	633.6	28.30	23.386		
6,700.0	6,656.5	6,689.4	6,639.2	15.5	15.4	-87.42	-117.7	355.8	662.2	633.4	28.79	22.999		
6,800.0	6,738.5	6,784.8	6,712.8	15.7	15.7	-86.73	-178.4	355.9	662.5	633.1	29.44	22.503		
6,900.0	6,812.3	6,879.4	6,777.7	16.0	16.1	-86.09	-247.2	355.9	663.0	632.7	30.31	21.872		
7,000.0	6,876.7	6,973.3	6,833.2	16.5	16.6	-85.52	-322.7	355.9	663.4	632.0	31.45	21.096		
7,100.0	6,930.5	7,066.4	6,878.7	17.1	17.3	-85.02	-403.9	356.0	663.8	631.0	32.88	20.193		
7,200.0	6,972.9	7,159.0	6,913.9	17.9	18.1	-84.60	-489.6	356.0	664.2	629.6	34.60	19.196		
7,300.0	7,003.2	7,250.0	6,938.1	18.9	19.0	-84.27	-577.2	356.1	664.6	628.0	36.60	18.158		
7,400.0	7,020.7	7,343.0	6,951.9	20.1	20.1	-84.03	-669.1	356.1	664.8	625.9	38.87	17.103		
7,500.0	7,025.4	7,436.3	6,954.7	21.3	21.3	-83.89	-762.3	356.2	664.9	623.6	41.35	16.080		
7,600.0	7,025.1	7,536.3	6,954.0	22.7	22.7	-83.85	-862.3	356.3	664.9	620.8	44.09	15.079		
7,700.0	7,024.9	7,636.3	6,953.3	24.1	24.1	-83.81	-962.3	356.3	664.9	617.9	46.99	14.151		
7,800.0	7,024.7	7,736.3	6,952.6	25.6	25.6	-83.77	-1,062.3	356.4	664.9	614.9	50.01	13.296		
7,900.0	7,024.4	7,836.3	6,951.9	27.1	27.1	-83.74	-1,162.3	356.4	664.9	611.8	53.13	12.515		
8,000.0	7,024.2	7,936.3	6,951.2	28.7	28.7	-83.70	-1,262.3	356.5	664.9	608.6	56.34	11.802		
8,100.0	7,023.9	8,036.3	6,950.5	30.3	30.4	-83.66	-1,362.3	356.5	664.9	605.3	59.62	11.152		
8,200.0	7,023.7	8,136.3	6,949.8	32.0	32.0	-83.62	-1,462.3	356.6	664.9	601.9	62.96	10.560		
8,300.0	7,023.4	8,236.3	6,949.1	33.7	33.7	-83.58	-1,562.3	356.7	664.9	598.5	66.35	10.020		
8,400.0	7,023.2	8,336.3	6,948.4	35.4	35.4	-83.54	-1,662.3	356.7	664.9	595.1	69.79	9.527		
8,500.0	7,022.9	8,436.3	6,947.7	37.1	37.2	-83.50	-1,762.3	356.8	664.9	591.6	73.27	9.075		
8,600.0	7,022.7	8,536.3	6,947.0	38.9	38.9	-83.46	-1,862.3	356.8	664.9	588.1	76.78	8.660		
8,700.0	7,022.5	8,636.3	6,946.3	40.6	40.7	-83.42	-1,962.3	356.9	664.9	584.6	80.31	8.279		
8,800.0	7,022.2	8,736.3	6,945.6	42.4	42.5	-83.38	-2,062.3	356.9	664.9	581.0	83.88	7.927		
8,900.0	7,022.0	8,836.3	6,944.9	44.2	44.3	-83.34	-2,162.3	357.0	664.9	577.4	87.46	7.602		
8,987.8	7,021.8	8,924.1	6,944.3	45.8	45.9	-83.31	-2,250.1	357.0	664.9	574.3	90.62	7.337		
9,000.0	7,021.7	8,936.3	6,944.2	46.0	46.1	-83.30	-2,262.3	357.1	664.9	573.8	91.06	7.302		
9,100.0	7,021.5	9,036.3	6,943.5	47.8	47.9	-83.26	-2,362.3	357.1	664.9	570.2	94.68	7.023		
9,200.0	7,021.2	9,136.3	6,942.8	49.6	49.7	-83.22	-2,462.3	357.2	664.9	566.6	98.31	6.763		
9,300.0	7,021.0	9,236.3	6,942.1	51.5	51.5	-83.18	-2,562.3	357.2	664.9	562.9	101.96	6.521		
9,400.0	7,020.8	9,336.3	6,941.4	53.3	53.4	-83.14	-2,662.3	357.3	664.9	559.3	105.61	6.295		
9,500.0	7,020.5	9,436.3	6,940.7	55.2	55.2	-83.11	-2,762.3	357.3	664.9	555.6	109.28	6.084		
9,600.0	7,020.3	9,536.3	6,940.0	57.0	57.1	-83.07	-2,862.3	357.4	664.9	551.9	112.96	5.886		
9,700.0	7,020.0	9,636.3	6,939.3	58.9	58.9	-83.03	-2,962.3	357.5	664.9	548.2	116.65	5.700		
9,800.0	7,019.8	9,736.3	6,938.6	60.7	60.8	-82.99	-3,062.3	357.5	664.9	544.6	120.34	5.525		
9,900.0	7,019.5	9,836.3	6,937.9	62.6	62.6	-82.95	-3,162.3	357.6	664.9	540.9	124.04	5.360		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Ritcher 34R-343
Project:	SEC.27-T7N-R64W	TVD Reference:	WELL @ 4883.0ft (RKB - 13')
Reference Site:	Richter 27T-HZ Pad Sec.27-T7N-R64W	MD Reference:	WELL @ 4883.0ft (RKB - 13')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Richter 34R-343	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #2 (7-25-13)	Offset TVD Reference:	Offset Datum

Offset Design Richter 27T-HZ Pad Sec.27-T7N-R64W - Richter 34R-223 - Wellbore #1 - Plan #1 (9-27-12)												Offset Site Error:	0.0 ft
Survey Program: 0-MWD												Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
10,000.0	7,019.3	9,936.3	6,937.2	64.4	64.5	-82.91	-3,262.3	357.6	664.9	537.2	127.75	5.205	
10,100.0	7,019.0	10,036.3	6,936.5	66.3	66.4	-82.87	-3,362.3	357.7	664.9	533.4	131.46	5.058	
10,200.0	7,018.8	10,136.3	6,935.8	68.2	68.3	-82.83	-3,462.3	357.7	664.9	529.7	135.17	4.919	
10,300.0	7,018.6	10,236.3	6,935.1	70.0	70.1	-82.79	-3,562.2	357.8	664.9	526.0	138.90	4.787	
10,400.0	7,018.3	10,336.3	6,934.4	71.9	72.0	-82.75	-3,662.2	357.9	664.9	522.3	142.62	4.662	
10,500.0	7,018.1	10,436.3	6,933.7	73.8	73.9	-82.71	-3,762.2	357.9	664.9	518.6	146.35	4.543	
10,600.0	7,017.8	10,536.3	6,933.0	75.7	75.8	-82.67	-3,862.2	358.0	664.9	514.8	150.09	4.430	
10,700.0	7,017.6	10,636.3	6,932.3	77.6	77.6	-82.63	-3,962.2	358.0	664.9	511.1	153.82	4.323	
10,800.0	7,017.3	10,736.3	6,931.6	79.4	79.5	-82.59	-4,062.2	358.1	664.9	507.4	157.56	4.220	
10,900.0	7,017.1	10,836.3	6,930.9	81.3	81.4	-82.55	-4,162.2	358.1	664.9	503.6	161.30	4.122	
11,000.0	7,016.8	10,936.3	6,930.2	83.2	83.3	-82.51	-4,262.2	358.2	664.9	499.9	165.05	4.029	
11,100.0	7,016.6	11,036.3	6,929.5	85.1	85.2	-82.48	-4,362.2	358.3	665.0	496.2	168.79	3.939	
11,200.0	7,016.4	11,136.3	6,928.8	87.0	87.1	-82.44	-4,462.2	358.3	665.0	492.4	172.54	3.854	
11,300.0	7,016.1	11,236.3	6,928.1	88.9	89.0	-82.40	-4,562.2	358.4	665.0	488.7	176.29	3.772	
11,400.0	7,015.9	11,336.3	6,927.4	90.8	90.9	-82.36	-4,662.2	358.4	665.0	484.9	180.05	3.693	
11,500.0	7,015.6	11,436.3	6,926.7	92.7	92.8	-82.32	-4,762.2	358.5	665.0	481.2	183.80	3.618	
11,600.0	7,015.4	11,536.3	6,926.0	94.6	94.7	-82.28	-4,862.2	358.5	665.0	477.4	187.55	3.546	
11,700.0	7,015.1	11,636.3	6,925.3	96.5	96.6	-82.24	-4,962.2	358.6	665.0	473.7	191.31	3.476	
11,727.7	7,015.1	11,664.0	6,925.1	97.0	97.1	-82.23	-4,989.9	358.6	665.0	472.6	192.35	3.457	
11,753.5	7,015.0	11,684.2	6,925.0	97.5	97.5	-82.22	-5,010.1	358.6	665.0	471.8	193.21	3.442 SF	

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Ritcher 34R-343
Project:	SEC.27-T7N-R64W	TVD Reference:	WELL @ 4883.0ft (RKB - 13')
Reference Site:	Richter 27T-HZ Pad Sec.27-T7N-R64W	MD Reference:	WELL @ 4883.0ft (RKB - 13')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Richter 34R-343	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #2 (7-25-13)	Offset TVD Reference:	Offset Datum

Offset Design Richter 27T-HZ Pad Sec.27-T7N-R64W - Richter 34R-403 - Wellbore #1 - Plan #1 (9-28-12)													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
0.0	0.0	0.0	0.0	0.0	0.0	83.19	3.7	30.6	30.8					
100.0	100.0	100.0	100.0	0.1	0.1	83.19	3.7	30.6	30.8	30.6	0.22	136.997		
200.0	200.0	200.0	200.0	0.3	0.3	83.19	3.7	30.6	30.8	30.1	0.67	45.666		
300.0	300.0	300.0	300.0	0.6	0.6	83.19	3.7	30.6	30.8	29.7	1.12	27.399		
400.0	400.0	400.0	400.0	0.8	0.8	83.19	3.7	30.6	30.8	29.2	1.57	19.571		
500.0	500.0	500.0	500.0	1.0	1.0	83.19	3.7	30.6	30.8	28.8	2.02	15.222		
600.0	600.0	600.0	600.0	1.2	1.2	83.19	3.7	30.6	30.8	28.3	2.47	12.454		
700.0	700.0	700.0	700.0	1.5	1.5	83.19	3.7	30.6	30.8	27.9	2.92	10.538		
800.0	800.0	800.0	800.0	1.7	1.7	83.19	3.7	30.6	30.8	27.4	3.37	9.133		
900.0	900.0	900.0	900.0	1.9	1.9	83.19	3.7	30.6	30.8	27.0	3.82	8.059		
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	83.19	3.7	30.6	30.8	26.5	4.27	7.210		
1,100.0	1,100.0	1,100.0	1,100.0	2.4	2.4	83.19	3.7	30.6	30.8	26.1	4.72	6.524		
1,200.0	1,200.0	1,200.0	1,200.0	2.6	2.6	83.19	3.7	30.6	30.8	25.6	5.17	5.956 CC, ES		
1,300.0	1,300.0	1,300.0	1,300.0	2.8	2.8	170.73	3.7	30.6	32.5	26.9	5.60	5.802		
1,400.0	1,399.8	1,399.8	1,399.8	3.0	3.0	172.00	3.7	30.6	37.7	31.7	6.02	6.257		
1,500.0	1,499.5	1,499.5	1,499.5	3.2	3.3	173.48	3.7	30.6	46.3	39.9	6.44	7.195		
1,600.0	1,598.7	1,598.7	1,598.7	3.5	3.5	174.81	3.7	30.6	58.5	51.6	6.85	8.532		
1,700.0	1,697.5	1,697.5	1,697.5	3.7	3.7	175.89	3.7	30.6	74.0	66.7	7.27	10.180		
1,800.0	1,796.1	1,796.1	1,796.1	4.0	3.9	176.64	3.7	30.6	90.5	82.8	7.70	11.751		
1,900.0	1,894.7	1,894.7	1,894.7	4.3	4.1	177.16	3.7	30.6	107.1	98.9	8.14	13.147		
2,000.0	1,993.3	1,993.3	1,993.3	4.6	4.4	177.54	3.7	30.6	123.6	115.0	8.59	14.395		
2,100.0	2,091.9	2,091.9	2,091.9	5.0	4.6	177.83	3.7	30.6	140.2	131.1	9.03	15.516		
2,200.0	2,190.6	2,190.6	2,190.6	5.3	4.8	178.06	3.7	30.6	156.7	147.3	9.48	16.526		
2,300.0	2,289.2	2,289.2	2,289.2	5.7	5.0	178.25	3.7	30.6	173.3	163.4	9.94	17.441		
2,400.0	2,387.8	2,387.8	2,387.8	6.0	5.3	178.40	3.7	30.6	189.9	179.5	10.39	18.274		
2,500.0	2,486.4	2,486.4	2,486.4	6.4	5.5	178.53	3.7	30.6	206.4	195.6	10.85	19.033		
2,600.0	2,585.0	2,585.0	2,585.0	6.7	5.7	178.64	3.7	30.6	223.0	211.7	11.30	19.729		
2,700.0	2,683.6	2,683.6	2,683.6	7.1	5.9	178.73	3.7	30.6	239.6	227.8	11.76	20.369		
2,800.0	2,782.3	2,782.3	2,782.3	7.4	6.1	178.81	3.7	30.6	256.2	243.9	12.22	20.958		
2,900.0	2,880.9	2,880.9	2,880.9	7.8	6.4	178.88	3.7	30.6	272.7	260.0	12.68	21.504		
3,000.0	2,979.5	2,979.5	2,979.5	8.2	6.6	178.95	3.7	30.6	289.3	276.2	13.14	22.009		
3,100.0	3,078.2	3,078.2	3,078.2	8.5	6.8	179.01	3.7	30.6	305.4	291.8	13.62	22.421		
3,200.0	3,177.3	3,177.3	3,177.3	8.8	7.0	179.05	3.7	30.6	318.4	304.3	14.08	22.615		
3,300.0	3,276.9	3,276.9	3,276.9	9.0	7.3	179.08	3.7	30.6	327.9	313.4	14.52	22.584		
3,400.0	3,376.7	3,376.7	3,376.7	9.2	7.5	179.10	3.7	30.6	333.9	319.0	14.94	22.351		
3,500.0	3,476.7	3,476.7	3,476.7	9.4	7.7	179.11	3.7	30.6	336.5	321.2	15.34	21.933		
3,600.0	3,576.7	3,576.7	3,576.7	9.5	7.9	92.09	3.7	30.6	336.6	320.8	15.76	21.363		
3,700.0	3,676.7	3,676.7	3,676.7	9.7	8.2	92.09	3.7	30.6	336.6	320.4	16.19	20.793		
3,800.0	3,776.7	3,776.7	3,776.7	9.9	8.4	92.09	3.7	30.6	336.6	320.0	16.62	20.251		
3,900.0	3,876.7	3,876.7	3,876.7	10.1	8.6	92.09	3.7	30.6	336.6	319.5	17.06	19.736		
4,000.0	3,976.7	3,976.7	3,976.7	10.3	8.8	92.09	3.7	30.6	336.6	319.1	17.49	19.245		
4,100.0	4,076.7	4,076.7	4,076.7	10.4	9.1	92.09	3.7	30.6	336.6	318.7	17.93	18.778		
4,200.0	4,176.7	4,176.7	4,176.7	10.6	9.3	92.09	3.7	30.6	336.6	318.2	18.36	18.331		
4,300.0	4,276.7	4,276.7	4,276.7	10.8	9.5	92.09	3.7	30.6	336.6	317.8	18.80	17.906		
4,400.0	4,376.7	4,376.7	4,376.7	11.0	9.7	92.09	3.7	30.6	336.6	317.4	19.24	17.498		
4,500.0	4,476.7	4,476.7	4,476.7	11.2	9.9	92.09	3.7	30.6	336.6	316.9	19.67	17.109		
4,600.0	4,576.7	4,576.7	4,576.7	11.4	10.2	92.09	3.7	30.6	336.6	316.5	20.11	16.736		
4,700.0	4,676.7	4,676.7	4,676.7	11.6	10.4	92.09	3.7	30.6	336.6	316.0	20.55	16.379		
4,800.0	4,776.7	4,776.7	4,776.7	11.8	10.6	92.09	3.7	30.6	336.6	315.6	20.99	16.036		
4,900.0	4,876.7	4,876.7	4,876.7	12.0	10.8	92.09	3.7	30.6	336.6	315.2	21.43	15.707		
5,000.0	4,976.7	4,976.7	4,976.7	12.1	11.1	92.09	3.7	30.6	336.6	314.7	21.87	15.391		

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Ritcher 34R-343
Project:	SEC.27-T7N-R64W	TVD Reference:	WELL @ 4883.0ft (RKB - 13')
Reference Site:	Richter 27T-HZ Pad Sec.27-T7N-R64W	MD Reference:	WELL @ 4883.0ft (RKB - 13')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Richter 34R-343	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #2 (7-25-13)	Offset TVD Reference:	Offset Datum

Offset Design Richter 27T-HZ Pad Sec.27-T7N-R64W - Richter 34R-403 - Wellbore #1 - Plan #1 (9-28-12)													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference	Offset	Semi Major Axis	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
5,100.0	5,076.7	5,076.7	5,076.7	12.3	11.3	92.09		3.7	30.6	336.6	314.3	22.31	15.087	
5,200.0	5,176.7	5,176.7	5,176.7	12.5	11.5	92.09		3.7	30.6	336.6	313.8	22.75	14.794	
5,300.0	5,276.7	5,276.7	5,276.7	12.7	11.7	92.09		3.7	30.6	336.6	313.4	23.19	14.513	
5,400.0	5,376.7	5,376.7	5,376.7	12.9	12.0	92.09		3.7	30.6	336.6	313.0	23.63	14.242	
5,500.0	5,476.7	5,476.7	5,476.7	13.1	12.2	92.09		3.7	30.6	336.6	312.5	24.08	13.980	
5,600.0	5,576.7	5,576.7	5,576.7	13.3	12.4	92.09		3.7	30.6	336.6	312.1	24.52	13.728	
5,700.0	5,676.7	5,676.7	5,676.7	13.5	12.6	92.09		3.7	30.6	336.6	311.6	24.96	13.485	
5,800.0	5,776.7	5,776.7	5,776.7	13.7	12.9	92.09		3.7	30.6	336.6	311.2	25.40	13.250	
5,900.0	5,876.7	5,876.3	5,876.3	13.9	13.1	92.26		2.6	30.6	336.6	310.8	25.82	13.037	
6,000.0	5,976.7	5,975.7	5,975.6	14.1	13.2	93.01		-1.8	30.6	336.8	310.6	26.21	12.851	
6,100.0	6,076.7	6,074.6	6,074.2	14.4	13.4	94.33		-9.5	30.6	337.3	310.7	26.59	12.684	
6,200.0	6,176.7	6,172.9	6,171.9	14.6	13.6	96.20		-20.6	30.6	338.4	311.4	26.98	12.540	
6,300.0	6,276.7	6,270.4	6,268.3	14.8	13.7	-81.34		-34.9	30.6	340.3	312.9	27.37	12.430	
6,400.0	6,376.2	6,369.1	6,365.4	14.9	13.9	-79.75		-52.3	30.5	341.7	314.0	27.72	12.327	
6,500.0	6,473.8	6,469.0	6,463.7	15.1	14.1	-80.40		-70.1	30.5	341.1	313.0	28.07	12.150	
6,600.0	6,567.8	6,562.8	6,555.0	15.3	14.3	-82.34		-91.6	30.5	339.3	310.8	28.45	11.926	
6,700.0	6,656.5	6,657.4	6,643.7	15.5	14.5	-84.43		-124.3	30.4	337.7	308.8	28.91	11.679	
6,800.0	6,738.5	6,753.5	6,728.9	15.7	14.8	-86.64		-168.5	30.2	336.4	306.9	29.52	11.396	
6,900.0	6,812.3	6,851.1	6,809.2	16.0	15.2	-88.93		-224.1	30.0	335.6	305.3	30.33	11.067	
7,000.0	6,876.7	6,950.5	6,882.9	16.5	15.7	-91.27		-290.6	29.7	335.3	303.9	31.37	10.687	
7,019.8	6,888.2	6,970.4	6,896.5	16.6	15.8	-91.74		-305.0	29.7	335.3	303.6	31.63	10.599	
7,100.0	6,930.5	7,051.7	6,948.4	17.1	16.4	-93.61		-367.6	29.4	335.4	302.7	32.71	10.256	
7,200.0	6,972.9	7,154.7	7,004.1	17.9	17.2	-95.91		-454.2	29.0	336.0	301.7	34.35	9.784	
7,300.0	7,003.2	7,259.7	7,048.4	18.9	18.2	-98.11		-549.3	28.5	337.1	300.8	36.30	9.287	
7,400.0	7,020.7	7,366.7	7,079.6	20.1	19.4	-100.18		-651.5	28.0	338.4	299.9	38.54	8.781	
7,500.0	7,025.4	7,474.1	7,096.5	21.3	20.8	-102.07		-757.5	27.4	339.9	298.9	41.00	8.291	
7,600.0	7,025.1	7,575.9	7,106.3	22.7	22.2	-103.75		-858.8	26.9	341.6	298.1	43.49	7.854	
7,700.0	7,024.9	7,680.4	7,109.0	24.1	23.7	-104.23		-963.2	26.8	342.0	295.7	46.29	7.388	
7,800.0	7,024.7	7,780.4	7,108.9	25.6	25.2	-104.26		-1,063.2	26.8	342.0	292.8	49.23	6.947	
7,900.0	7,024.4	7,880.4	7,108.8	27.1	26.7	-104.28		-1,163.2	26.9	341.9	289.7	52.26	6.543	
8,000.0	7,024.2	7,980.4	7,108.7	28.7	28.3	-104.31		-1,263.2	26.9	341.9	286.5	55.38	6.174	
8,100.0	7,023.9	8,080.4	7,108.6	30.3	30.0	-104.34		-1,363.2	26.9	341.8	283.3	58.57	5.837	
8,200.0	7,023.7	8,180.4	7,108.5	32.0	31.6	-104.37		-1,463.2	26.9	341.8	280.0	61.82	5.529	
8,300.0	7,023.4	8,280.4	7,108.4	33.7	33.3	-104.39		-1,563.2	27.0	341.7	276.6	65.12	5.248	
8,400.0	7,023.2	8,380.4	7,108.3	35.4	35.1	-104.42		-1,663.2	27.0	341.7	273.2	68.47	4.991	
8,500.0	7,022.9	8,480.4	7,108.2	37.1	36.8	-104.45		-1,763.2	27.0	341.7	269.8	71.85	4.755	
8,600.0	7,022.7	8,580.4	7,108.1	38.9	38.6	-104.47		-1,863.2	27.0	341.6	266.3	75.27	4.538	
8,700.0	7,022.5	8,680.4	7,108.0	40.6	40.3	-104.50		-1,963.2	27.1	341.6	262.8	78.72	4.339	
8,800.0	7,022.2	8,780.4	7,107.9	42.4	42.1	-104.53		-2,063.2	27.1	341.5	259.3	82.19	4.155	
8,900.0	7,022.0	8,880.4	7,107.8	44.2	43.9	-104.56		-2,163.2	27.1	341.5	255.8	85.68	3.985	
9,000.0	7,021.7	8,980.4	7,107.7	46.0	45.7	-104.58		-2,263.2	27.1	341.4	252.2	89.19	3.828	
9,100.0	7,021.5	9,080.4	7,107.6	47.8	47.5	-104.61		-2,363.2	27.2	341.4	248.7	92.72	3.682	
9,200.0	7,021.2	9,180.4	7,107.5	49.6	49.4	-104.64		-2,463.2	27.2	341.3	245.1	96.26	3.546	
9,300.0	7,021.0	9,280.4	7,107.4	51.5	51.2	-104.67		-2,563.2	27.2	341.3	241.5	99.82	3.419	
9,400.0	7,020.8	9,380.4	7,107.3	53.3	53.0	-104.69		-2,663.2	27.2	341.2	237.8	103.39	3.301	
9,500.0	7,020.5	9,480.4	7,107.2	55.2	54.9	-104.72		-2,763.2	27.3	341.2	234.2	106.96	3.190	
9,600.0	7,020.3	9,580.3	7,107.1	57.0	56.7	-104.75		-2,863.2	27.3	341.1	230.6	110.55	3.086	
9,700.0	7,020.0	9,680.3	7,107.0	58.9	58.6	-104.78		-2,963.2	27.3	341.1	227.0	114.15	2.988	
9,800.0	7,019.8	9,780.3	7,106.9	60.7	60.5	-104.80		-3,063.2	27.3	341.1	223.3	117.75	2.896	
9,900.0	7,019.5	9,880.3	7,106.8	62.6	62.3	-104.83		-3,163.2	27.3	341.0	219.6	121.36	2.810	
10,000.0	7,019.3	9,980.3	7,106.7	64.4	64.2	-104.86		-3,263.2	27.4	341.0	216.0	124.97	2.728	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Ritcher 34R-343
Project:	SEC.27-T7N-R64W	TVD Reference:	WELL @ 4883.0ft (RKB - 13')
Reference Site:	Richter 27T-HZ Pad Sec.27-T7N-R64W	MD Reference:	WELL @ 4883.0ft (RKB - 13')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Richter 34R-343	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #2 (7-25-13)	Offset TVD Reference:	Offset Datum

Offset Design Richter 27T-HZ Pad Sec.27-T7N-R64W - Richter 34R-403 - Wellbore #1 - Plan #1 (9-28-12)													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance				Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)		+N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
10,100.0	7,019.0	10,080.3	7,106.6	66.3	66.1	-104.89	-3,363.2	27.4	340.9	212.3	128.59	2.651		
10,200.0	7,018.8	10,180.3	7,106.5	68.2	67.9	-104.91	-3,463.2	27.4	340.9	208.6	132.22	2.578		
10,300.0	7,018.6	10,280.3	7,106.4	70.0	69.8	-104.94	-3,563.2	27.4	340.8	205.0	135.85	2.509		
10,400.0	7,018.3	10,380.3	7,106.3	71.9	71.7	-104.97	-3,663.2	27.5	340.8	201.3	139.48	2.443		
10,500.0	7,018.1	10,480.3	7,106.2	73.8	73.6	-105.00	-3,763.2	27.5	340.7	197.6	143.12	2.381		
10,600.0	7,017.8	10,580.3	7,106.1	75.7	75.5	-105.02	-3,863.2	27.5	340.7	193.9	146.76	2.321		
10,700.0	7,017.6	10,680.3	7,106.0	77.6	77.3	-105.05	-3,963.2	27.5	340.6	190.2	150.41	2.265		
10,800.0	7,017.3	10,780.3	7,105.9	79.4	79.2	-105.08	-4,063.2	27.6	340.6	186.5	154.06	2.211		
10,900.0	7,017.1	10,880.3	7,105.8	81.3	81.1	-105.11	-4,163.2	27.6	340.5	182.8	157.70	2.159		
11,000.0	7,016.8	10,980.3	7,105.7	83.2	83.0	-105.13	-4,263.2	27.6	340.5	179.1	161.36	2.110		
11,100.0	7,016.6	11,080.3	7,105.6	85.1	84.9	-105.16	-4,363.2	27.6	340.5	175.4	165.01	2.063		
11,200.0	7,016.4	11,180.3	7,105.5	87.0	86.8	-105.19	-4,463.2	27.7	340.4	171.7	168.67	2.018		
11,300.0	7,016.1	11,280.3	7,105.4	88.9	88.7	-105.22	-4,563.2	27.7	340.4	168.0	172.32	1.975		
11,400.0	7,015.9	11,380.3	7,105.3	90.8	90.6	-105.24	-4,663.2	27.7	340.3	164.3	175.98	1.934		
11,500.0	7,015.6	11,480.3	7,105.2	92.7	92.5	-105.27	-4,763.2	27.7	340.3	160.6	179.64	1.894		
11,600.0	7,015.4	11,580.3	7,105.1	94.6	94.4	-105.30	-4,863.2	27.8	340.2	156.9	183.31	1.856		
11,700.0	7,015.1	11,680.3	7,105.0	96.5	96.3	-105.33	-4,963.2	27.8	340.2	153.2	186.97	1.820		
11,740.5	7,015.0	11,720.9	7,105.0	97.3	97.0	-105.34	-5,003.7	27.8	340.2	151.8	188.38	1.806		
11,753.5	7,015.0	11,730.2	7,105.0	97.5	97.1	-105.34	-5,013.0	27.8	340.2	151.4	188.75	1.802 SF		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Ritcher 34R-343
Project:	SEC.27-T7N-R64W	TVD Reference:	WELL @ 4883.0ft (RKB - 13')
Reference Site:	Richter 27T-HZ Pad Sec.27-T7N-R64W	MD Reference:	WELL @ 4883.0ft (RKB - 13')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Richter 34R-343	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #2 (7-25-13)	Offset TVD Reference:	Offset Datum

Offset Design Richter 27T-HZ Pad Sec.27-T7N-R64W - Richter 34R-423 - Wellbore #1 - Plan #1 (9-28-12)												Offset Site Error:	0.0 ft
Survey Program: 0-MWD												Offset Well Error:	0.0 ft
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	87.65	3.7	88.9	89.0				
100.0	100.0	100.0	100.0	0.1	0.1	87.65	3.7	88.9	89.0	88.8	0.22	396.057	
200.0	200.0	200.0	200.0	0.3	0.3	87.65	3.7	88.9	89.0	88.3	0.67	132.019	
300.0	300.0	300.0	300.0	0.6	0.6	87.65	3.7	88.9	89.0	87.9	1.12	79.211	
400.0	400.0	400.0	400.0	0.8	0.8	87.65	3.7	88.9	89.0	87.4	1.57	56.580	
500.0	500.0	500.0	500.0	1.0	1.0	87.65	3.7	88.9	89.0	87.0	2.02	44.006	
600.0	600.0	600.0	600.0	1.2	1.2	87.65	3.7	88.9	89.0	86.5	2.47	36.005	
700.0	700.0	700.0	700.0	1.5	1.5	87.65	3.7	88.9	89.0	86.1	2.92	30.466	
800.0	800.0	800.0	800.0	1.7	1.7	87.65	3.7	88.9	89.0	85.6	3.37	26.404	
900.0	900.0	900.0	900.0	1.9	1.9	87.65	3.7	88.9	89.0	85.2	3.82	23.297	
1,000.0	1,000.0	1,000.0	1,000.0	2.1	2.1	87.65	3.7	88.9	89.0	84.7	4.27	20.845 CC, ES	
1,100.0	1,100.0	1,097.0	1,097.0	2.4	2.3	87.80	3.5	90.6	90.7	86.0	4.70	19.299	
1,200.0	1,200.0	1,193.7	1,193.6	2.6	2.5	88.24	2.9	95.5	95.7	90.6	5.12	18.691	
1,300.0	1,300.0	1,289.9	1,289.4	2.8	2.7	175.94	2.1	103.5	105.8	100.3	5.53	19.127	
1,400.0	1,399.8	1,384.7	1,383.5	3.0	3.0	176.76	0.9	114.6	122.6	116.7	5.94	20.663	
1,500.0	1,499.5	1,477.5	1,475.3	3.2	3.2	177.55	-0.7	128.4	146.1	139.8	6.34	23.050	
1,600.0	1,598.7	1,573.1	1,569.5	3.5	3.5	178.25	-2.4	144.3	174.7	167.9	6.74	25.917	
1,700.0	1,697.5	1,667.8	1,662.9	3.7	3.8	178.77	-4.1	160.2	206.5	199.4	7.14	28.943	
1,800.0	1,796.1	1,762.3	1,756.0	4.0	4.1	179.17	-5.9	175.9	239.4	231.8	7.55	31.691	
1,900.0	1,894.7	1,856.7	1,849.1	4.3	4.4	179.47	-7.6	191.7	272.2	264.2	7.98	34.115	
2,000.0	1,993.3	1,951.2	1,942.2	4.6	4.7	179.70	-9.3	207.4	305.1	296.7	8.41	36.271	
2,100.0	2,091.9	2,045.6	2,035.3	5.0	5.1	179.89	-11.0	223.2	337.9	329.1	8.85	38.196	
2,200.0	2,190.6	2,140.1	2,128.5	5.3	5.4	-179.95	-12.7	238.9	370.8	361.5	9.29	39.920	
2,300.0	2,289.2	2,234.5	2,221.6	5.7	5.7	-179.82	-14.5	254.7	403.7	393.9	9.73	41.470	
2,400.0	2,387.8	2,328.9	2,314.7	6.0	6.1	-179.71	-16.2	270.4	436.5	426.3	10.18	42.871	
2,500.0	2,486.4	2,423.4	2,407.8	6.4	6.4	-179.61	-17.9	286.2	469.4	458.7	10.63	44.140	
2,600.0	2,585.0	2,517.8	2,500.9	6.7	6.8	-179.53	-19.6	301.9	502.2	491.2	11.09	45.295	
2,700.0	2,683.6	2,612.3	2,594.0	7.1	7.1	-179.45	-21.3	317.7	535.1	523.6	11.55	46.350	
2,800.0	2,782.3	2,706.7	2,687.1	7.4	7.5	-179.39	-23.1	333.4	568.0	556.0	12.00	47.316	
2,900.0	2,880.9	2,801.1	2,780.2	7.8	7.8	-179.33	-24.8	349.2	600.8	588.4	12.46	48.204	
3,000.0	2,979.5	2,895.6	2,873.3	8.2	8.2	-179.28	-26.5	364.9	633.7	620.8	12.93	49.022	
3,100.0	3,078.2	2,990.2	2,966.6	8.5	8.6	-179.24	-28.2	380.7	666.1	652.7	13.41	49.659	
3,200.0	3,177.3	3,085.8	3,060.8	8.8	8.9	-179.20	-30.0	396.6	695.5	681.6	13.89	50.060	
3,300.0	3,276.9	3,182.3	3,155.9	9.0	9.3	-179.16	-31.7	412.7	721.6	707.2	14.36	50.241	
3,400.0	3,376.7	3,279.7	3,251.9	9.2	9.7	-179.12	-33.5	429.0	744.3	729.5	14.82	50.229	
3,500.0	3,476.7	3,377.8	3,348.7	9.4	10.0	-179.08	-35.3	445.3	763.6	748.3	15.26	50.045	
3,600.0	3,576.7	3,476.4	3,445.8	9.5	10.4	93.95	-37.1	461.8	780.4	764.7	15.69	49.729	
3,700.0	3,676.7	3,574.9	3,543.0	9.7	10.8	94.00	-38.9	478.2	797.2	781.1	16.14	49.381	
3,800.0	3,776.7	3,673.5	3,640.2	9.9	11.2	94.04	-40.7	494.6	814.0	797.4	16.60	49.049	
3,900.0	3,876.7	3,772.1	3,737.4	10.1	11.6	94.09	-42.5	511.1	830.7	813.7	17.05	48.731	
4,000.0	3,976.7	3,870.7	3,834.6	10.3	11.9	94.13	-44.3	527.5	847.5	830.0	17.50	48.426	
4,100.0	4,076.7	3,969.3	3,931.8	10.4	12.3	94.17	-46.1	544.0	864.3	846.3	17.96	48.134	
4,200.0	4,176.7	4,067.9	4,028.9	10.6	12.7	94.21	-47.9	560.4	881.0	862.6	18.41	47.855	
4,300.0	4,276.7	4,166.4	4,126.1	10.8	13.1	94.25	-49.7	576.9	897.8	878.9	18.87	47.586	
4,400.0	4,376.7	4,265.0	4,223.3	11.0	13.5	94.28	-51.5	593.3	914.6	895.2	19.32	47.329	
4,500.0	4,476.7	4,363.6	4,320.5	11.2	13.8	94.32	-53.3	609.7	931.3	911.5	19.78	47.081	
4,600.0	4,576.7	4,462.2	4,417.7	11.4	14.2	94.35	-55.1	626.2	948.1	927.9	20.24	46.843	
4,700.0	4,676.7	4,560.8	4,514.9	11.6	14.6	94.39	-56.9	642.6	964.9	944.2	20.70	46.615	
4,800.0	4,776.7	4,708.2	4,660.7	11.8	15.0	94.43	-59.2	663.7	979.3	958.1	21.22	46.153	
4,900.0	4,876.7	4,859.8	4,811.7	12.0	15.4	94.45	-60.7	677.6	988.5	966.8	21.72	45.509	
5,000.0	4,976.7	5,012.5	4,964.3	12.1	15.6	94.46	-61.3	683.5	992.4	970.2	22.21	44.680	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Ritcher 34R-343
Project:	SEC.27-T7N-R64W	TVD Reference:	WELL @ 4883.0ft (RKB - 13')
Reference Site:	Richter 27T-HZ Pad Sec.27-T7N-R64W	MD Reference:	WELL @ 4883.0ft (RKB - 13')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Richter 34R-343	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #2 (7-25-13)	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.0 ft
Survey Program: 0-MWD												Offset Well Error:	0.0 ft
Richter 27T-HZ Pad Sec.27-T7N-R64W - Richter 34R-423 - Wellbore #1 - Plan #1 (9-28-12)													
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Distance		Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)		Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)					
5,100.0	5,076.7	5,124.9	5,076.7	12.3	15.8	94.46	-61.3	683.7	992.6	969.9	22.64	43.849	
5,200.0	5,176.7	5,224.9	5,176.7	12.5	15.9	94.46	-61.3	683.7	992.6	969.5	23.04	43.072	
5,300.0	5,276.7	5,324.9	5,276.7	12.7	16.1	94.46	-61.3	683.7	992.6	969.1	23.45	42.319	
5,400.0	5,376.7	5,424.9	5,376.7	12.9	16.2	94.46	-61.3	683.7	992.6	968.7	23.87	41.590	
5,500.0	5,476.7	5,524.9	5,476.7	13.1	16.4	94.46	-61.3	683.7	992.6	968.3	24.28	40.883	
5,600.0	5,576.7	5,624.9	5,576.7	13.3	16.5	94.46	-61.3	683.7	992.6	967.9	24.69	40.198	
5,700.0	5,676.7	5,724.9	5,676.7	13.5	16.7	94.46	-61.3	683.7	992.6	967.4	25.11	39.533	
5,800.0	5,776.7	5,824.9	5,776.7	13.7	16.8	94.46	-61.3	683.7	992.6	967.0	25.52	38.888	
5,900.0	5,876.7	5,924.9	5,876.7	13.9	17.0	94.46	-61.3	683.7	992.6	966.6	25.94	38.263	
6,000.0	5,976.7	6,024.9	5,976.7	14.1	17.2	94.46	-61.3	683.7	992.6	966.2	26.36	37.655	
6,100.0	6,076.7	6,124.9	6,076.7	14.4	17.3	94.46	-61.3	683.7	992.6	965.8	26.78	37.066	
6,200.0	6,176.7	6,224.9	6,176.7	14.6	17.5	94.46	-61.3	683.7	992.6	965.4	27.20	36.493	
6,300.0	6,276.7	6,324.9	6,276.7	14.8	17.7	-85.48	-61.3	683.7	992.5	964.9	27.62	35.938	
6,400.0	6,376.2	6,421.0	6,372.7	14.9	17.8	-85.94	-62.3	683.7	992.0	964.0	27.99	35.436	
6,500.0	6,473.8	6,512.6	6,463.7	15.1	18.0	-86.55	-72.2	683.8	991.3	962.9	28.36	34.957	
6,600.0	6,567.8	6,605.3	6,554.0	15.3	18.1	-87.23	-93.3	683.8	990.6	961.9	28.76	34.448	
6,700.0	6,656.5	6,700.0	6,642.8	15.5	18.3	-87.96	-126.0	683.8	990.1	960.9	29.24	33.860	
6,800.0	6,738.5	6,794.9	6,727.0	15.7	18.6	-88.72	-169.5	683.9	989.7	959.8	29.86	33.143	
6,900.0	6,812.3	6,892.0	6,807.0	16.0	18.9	-89.50	-224.4	683.9	989.5	958.8	30.69	32.247	
6,963.7	6,854.5	6,954.7	6,854.7	16.3	19.1	-90.02	-265.1	684.0	989.4	958.1	31.36	31.554	
7,000.0	6,876.7	6,990.8	6,880.5	16.5	19.3	-90.31	-290.3	684.0	989.5	957.7	31.77	31.148	
7,100.0	6,930.5	7,091.4	6,946.1	17.1	19.8	-91.11	-366.6	684.1	989.6	956.5	33.15	29.855	
7,200.0	6,972.9	7,194.0	7,002.0	17.9	20.4	-91.91	-452.5	684.2	990.0	955.1	34.85	28.403	
7,300.0	7,003.2	7,298.6	7,046.7	18.9	21.3	-92.68	-547.0	684.3	990.5	953.6	36.88	26.856	
7,400.0	7,020.7	7,405.2	7,078.5	20.1	22.3	-93.41	-648.6	684.4	991.2	952.0	39.21	25.279	
7,500.0	7,025.4	7,512.8	7,096.0	21.3	23.4	-94.08	-754.8	684.5	992.0	950.2	41.78	23.743	
7,600.0	7,025.1	7,614.9	7,106.0	22.7	24.7	-94.67	-856.3	684.6	992.7	948.2	44.49	22.315	
7,700.0	7,024.9	7,720.8	7,109.0	24.1	26.1	-94.86	-962.1	684.7	993.0	945.6	47.42	20.938	
7,800.0	7,024.7	7,820.8	7,108.9	25.6	27.4	-94.86	-1,062.1	684.8	993.0	942.6	50.42	19.696	
7,900.0	7,024.4	7,920.8	7,108.8	27.1	28.9	-94.87	-1,162.1	684.9	993.0	939.5	53.52	18.555	
8,000.0	7,024.2	8,020.8	7,108.7	28.7	30.4	-94.88	-1,262.1	685.1	993.0	936.3	56.71	17.511	
8,100.0	7,023.9	8,120.8	7,108.6	30.3	31.9	-94.89	-1,362.1	685.2	993.1	933.1	59.98	16.558	
8,200.0	7,023.7	8,220.8	7,108.5	32.0	33.5	-94.90	-1,462.1	685.3	993.1	929.8	63.31	15.687	
8,300.0	7,023.4	8,320.8	7,108.4	33.7	35.1	-94.91	-1,562.1	685.4	993.1	926.4	66.69	14.891	
8,400.0	7,023.2	8,420.8	7,108.3	35.4	36.8	-94.91	-1,662.1	685.5	993.1	923.0	70.12	14.163	
8,500.0	7,022.9	8,520.8	7,108.2	37.1	38.4	-94.92	-1,762.1	685.6	993.1	919.5	73.59	13.495	
8,600.0	7,022.7	8,620.8	7,108.1	38.9	40.1	-94.93	-1,862.1	685.8	993.2	916.1	77.10	12.882	
8,700.0	7,022.5	8,720.8	7,108.0	40.6	41.8	-94.94	-1,962.1	685.9	993.2	912.5	80.63	12.317	
8,800.0	7,022.2	8,820.8	7,107.9	42.4	43.6	-94.95	-2,062.1	686.0	993.2	909.0	84.19	11.797	
8,900.0	7,022.0	8,920.8	7,107.8	44.2	45.3	-94.96	-2,162.1	686.1	993.2	905.4	87.78	11.315	
9,000.0	7,021.7	9,020.8	7,107.7	46.0	47.1	-94.96	-2,262.1	686.2	993.2	901.9	91.38	10.869	
9,100.0	7,021.5	9,120.8	7,107.6	47.8	48.9	-94.97	-2,362.1	686.3	993.3	898.3	95.01	10.455	
9,200.0	7,021.2	9,220.8	7,107.5	49.6	50.6	-94.98	-2,462.1	686.5	993.3	894.6	98.65	10.069	
9,300.0	7,021.0	9,320.8	7,107.4	51.5	52.4	-94.99	-2,562.1	686.6	993.3	891.0	102.30	9.710	
9,400.0	7,020.8	9,420.8	7,107.3	53.3	54.2	-95.00	-2,662.1	686.7	993.3	887.4	105.96	9.374	
9,500.0	7,020.5	9,520.8	7,107.2	55.2	56.0	-95.01	-2,762.1	686.8	993.3	883.7	109.64	9.060	
9,600.0	7,020.3	9,620.8	7,107.1	57.0	57.9	-95.02	-2,862.1	686.9	993.4	880.0	113.33	8.765	
9,700.0	7,020.0	9,720.8	7,107.0	58.9	59.7	-95.02	-2,962.1	687.0	993.4	876.4	117.03	8.489	
9,800.0	7,019.8	9,820.8	7,106.9	60.7	61.5	-95.03	-3,062.1	687.2	993.4	872.7	120.73	8.228	
9,900.0	7,019.5	9,920.8	7,106.8	62.6	63.4	-95.04	-3,162.1	687.3	993.4	869.0	124.44	7.983	
10,000.0	7,019.3	10,020.8	7,106.7	64.4	65.2	-95.05	-3,262.1	687.4	993.4	865.3	128.16	7.751	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Ritcher 34R-343
Project:	SEC.27-T7N-R64W	TVD Reference:	WELL @ 4883.0ft (RKB - 13')
Reference Site:	Richter 27T-HZ Pad Sec.27-T7N-R64W	MD Reference:	WELL @ 4883.0ft (RKB - 13')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Richter 34R-343	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #2 (7-25-13)	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Richter 27T-HZ Pad Sec.27-T7N-R64W - Richter 34R-423 - Wellbore #1 - Plan #1 (9-28-12)														
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor		
10,100.0	7,019.0	10,120.8	7,106.6	66.3	67.1	-95.06	-3,362.1	687.5	993.5	861.6	131.89	7.532		
10,200.0	7,018.8	10,220.8	7,106.5	68.2	68.9	-95.07	-3,462.1	687.6	993.5	857.9	135.62	7.325		
10,300.0	7,018.6	10,320.8	7,106.4	70.0	70.8	-95.07	-3,562.1	687.7	993.5	854.1	139.36	7.129		
10,400.0	7,018.3	10,420.8	7,106.3	71.9	72.6	-95.08	-3,662.1	687.9	993.5	850.4	143.10	6.943		
10,500.0	7,018.1	10,520.8	7,106.2	73.8	74.5	-95.09	-3,762.1	688.0	993.5	846.7	146.85	6.766		
10,600.0	7,017.8	10,620.8	7,106.1	75.7	76.3	-95.10	-3,862.1	688.1	993.6	843.0	150.60	6.597		
10,700.0	7,017.6	10,720.8	7,106.0	77.6	78.2	-95.11	-3,962.1	688.2	993.6	839.2	154.36	6.437		
10,800.0	7,017.3	10,820.8	7,105.9	79.4	80.1	-95.12	-4,062.1	688.3	993.6	835.5	158.12	6.284		
10,900.0	7,017.1	10,920.8	7,105.8	81.3	82.0	-95.12	-4,162.1	688.5	993.6	831.7	161.88	6.138		
11,000.0	7,016.8	11,020.8	7,105.7	83.2	83.8	-95.13	-4,262.1	688.6	993.6	828.0	165.65	5.998		
11,100.0	7,016.6	11,120.8	7,105.6	85.1	85.7	-95.14	-4,362.1	688.7	993.7	824.2	169.42	5.865		
11,200.0	7,016.4	11,220.8	7,105.5	87.0	87.6	-95.15	-4,462.1	688.8	993.7	820.5	173.19	5.738		
11,300.0	7,016.1	11,320.8	7,105.4	88.9	89.5	-95.16	-4,562.1	688.9	993.7	816.7	176.96	5.615		
11,400.0	7,015.9	11,420.8	7,105.3	90.8	91.4	-95.17	-4,662.1	689.0	993.7	813.0	180.74	5.498		
11,500.0	7,015.6	11,520.8	7,105.2	92.7	93.2	-95.17	-4,762.1	689.2	993.7	809.2	184.52	5.386		
11,600.0	7,015.4	11,620.8	7,105.1	94.6	95.1	-95.18	-4,862.1	689.3	993.8	805.5	188.30	5.278		
11,700.0	7,015.1	11,720.8	7,105.0	96.5	97.0	-95.19	-4,962.1	689.4	993.8	801.7	192.08	5.174		
11,726.7	7,015.1	11,747.5	7,105.0	97.0	97.5	-95.19	-4,988.8	689.4	993.8	800.7	193.09	5.147		
11,753.5	7,015.0	11,768.0	7,105.0	97.5	97.9	-95.20	-5,009.4	689.4	993.8	799.8	193.99	5.123 SF		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Ritcher 34R-343
Project:	SEC.27-T7N-R64W	TVD Reference:	WELL @ 4883.0ft (RKB - 13')
Reference Site:	Richter 27T-HZ Pad Sec.27-T7N-R64W	MD Reference:	WELL @ 4883.0ft (RKB - 13')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Richter 34R-343	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #2 (7-25-13)	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.0 ft
Richter 27T-HZ Pad Sec.27-T7N-R64W - Richter 34U-303 - Wellbore #1 - Plan #2 (7-25-13)													Offset Well Error:	0.0 ft
Survey Program: 0-MWD														
Reference		Offset		Semi Major Axis		Highside Toolface (°)	Distance		Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning	
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)		Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)						
0.0	0.0	0.0	0.0	0.0	0.0	88.25	3.6	119.5	119.6					
100.0	100.0	100.0	100.0	0.1	0.1	88.25	3.6	119.5	119.6	119.4	0.22	532.001		
200.0	200.0	200.0	200.0	0.3	0.3	88.25	3.6	119.5	119.6	118.9	0.67	177.334 CC, ES		
300.0	300.0	296.0	295.9	0.6	0.5	88.26	3.7	121.1	121.3	120.1	1.11	109.698		
400.0	400.0	391.7	391.6	0.8	0.8	88.27	3.8	125.9	126.3	124.7	1.54	81.830		
500.0	500.0	487.0	486.5	1.0	1.0	88.29	4.0	133.9	134.6	132.6	2.00	67.160		
600.0	600.0	581.7	580.6	1.2	1.3	88.32	4.3	144.9	146.3	143.8	2.50	58.590		
700.0	700.0	675.6	673.4	1.5	1.6	88.34	4.6	158.9	161.2	158.1	3.03	53.276		
800.0	800.0	768.4	764.7	1.7	1.9	88.37	5.0	175.7	179.3	175.7	3.60	49.868		
900.0	900.0	860.0	854.2	1.9	2.3	88.39	5.5	195.2	200.6	196.4	4.21	47.640		
1,000.0	1,000.0	954.0	945.4	2.1	2.7	88.41	6.0	217.7	224.5	219.7	4.87	46.063		
1,100.0	1,100.0	1,051.0	1,039.5	2.4	3.2	88.43	6.6	241.3	248.8	243.3	5.58	44.621		
1,200.0	1,200.0	1,148.0	1,133.6	2.6	3.7	88.45	7.2	264.9	273.2	266.9	6.29	43.442 SF		
1,300.0	1,300.0	1,244.5	1,227.2	2.8	4.2	175.47	7.8	288.3	299.2	293.5	5.70	52.497		
1,400.0	1,399.8	1,340.1	1,320.0	3.0	4.7	175.50	8.3	311.6	328.5	322.4	6.14	53.521		
1,500.0	1,499.5	1,434.6	1,411.6	3.2	5.2	175.56	8.9	334.6	361.2	354.6	6.57	55.003		
1,600.0	1,598.7	1,527.9	1,502.1	3.5	5.7	175.64	9.4	357.2	397.1	390.1	6.98	56.860		
1,700.0	1,697.5	1,620.0	1,591.4	3.7	6.1	175.74	10.0	379.6	436.1	428.7	7.40	58.947		
1,800.0	1,796.1	1,711.6	1,680.3	4.0	6.6	175.88	10.5	401.9	476.2	468.3	7.85	60.691		
1,900.0	1,894.7	1,803.3	1,769.2	4.3	7.1	175.99	11.1	424.2	516.2	507.9	8.30	62.207		
2,000.0	1,993.3	1,894.9	1,858.1	4.6	7.6	176.09	11.6	446.4	556.2	547.5	8.75	63.532		
2,100.0	2,091.9	1,986.5	1,947.0	5.0	8.0	176.17	12.2	468.7	596.2	587.0	9.22	64.699		
2,200.0	2,190.6	2,078.2	2,035.9	5.3	8.5	176.25	12.7	491.0	636.3	626.6	9.68	65.733		
2,300.0	2,289.2	2,169.8	2,124.8	5.7	9.0	176.31	13.2	513.3	676.3	666.1	10.15	66.654		
2,400.0	2,387.8	2,261.4	2,213.6	6.0	9.5	176.37	13.8	535.5	716.3	705.7	10.62	67.477		
2,500.0	2,486.4	2,353.1	2,302.5	6.4	10.0	176.42	14.3	557.8	756.3	745.2	11.09	68.218		
2,600.0	2,585.0	2,444.7	2,391.4	6.7	10.4	176.47	14.9	580.1	796.4	784.8	11.56	68.887		
2,700.0	2,683.6	2,536.4	2,480.3	7.1	10.9	176.51	15.4	602.4	836.4	824.3	12.04	69.494		
2,800.0	2,782.3	2,628.0	2,569.2	7.4	11.4	176.55	16.0	624.6	876.4	863.9	12.51	70.046		
2,900.0	2,880.9	2,719.6	2,658.1	7.8	11.9	176.58	16.5	646.9	916.4	903.4	12.99	70.550		
3,000.0	2,979.5	2,811.3	2,747.0	8.2	12.4	176.61	17.0	669.2	956.5	943.0	13.47	71.012		
3,100.0	3,078.2	2,903.1	2,836.0	8.5	12.9	176.67	17.6	691.5	996.0	982.0	13.99	71.200		

Company:	PETROLEUM DEVELOPMENT CORP Weld County CO	Local Co-ordinate Reference:	Well Richter 34R-343
Project:	SEC.27-T7N-R64W	TVD Reference:	WELL @ 4883.0ft (RKB - 13')
Reference Site:	Richter 27T-HZ Pad Sec.27-T7N-R64W	MD Reference:	WELL @ 4883.0ft (RKB - 13')
Site Error:	0.0ft	North Reference:	True
Reference Well:	Richter 34R-343	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #2 (7-25-13)	Offset TVD Reference:	Offset Datum

Reference Depths are relative to WELL @ 4883.0ft (RKB - 13')

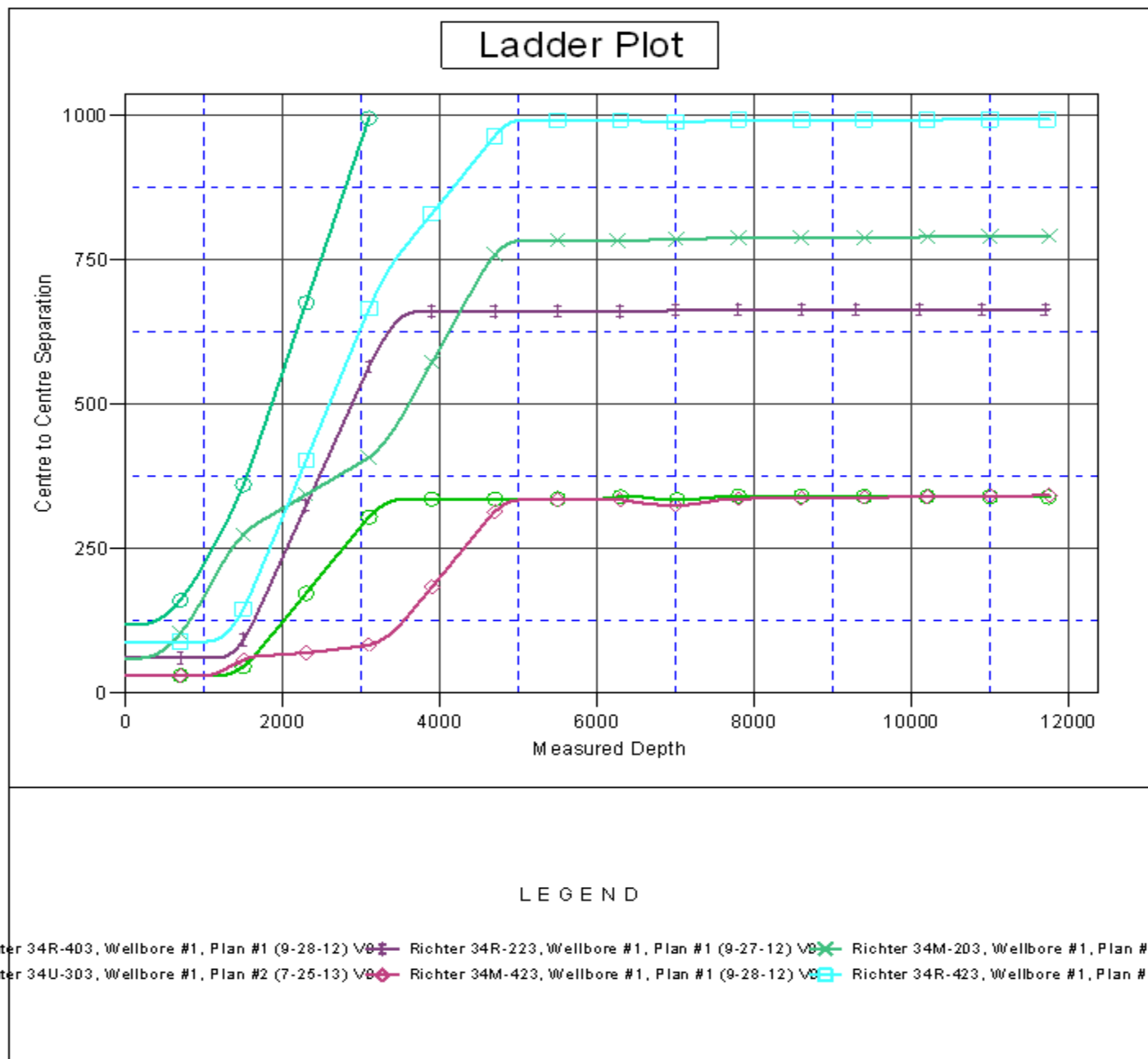
Offset Depths are relative to Offset Datum

Central Meridian is -105.500000 °

Coordinates are relative to: Richter 34R-343

Coordinate System is US State Plane 1983, Colorado Northern Zone

Grid Convergence at Surface is: 0.63°



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